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FACULTY OF EDUCATION
The University of Alberta

EDITOR'S NOTES

This issue contains articles from varied fields of interest: history of education, instruction, counselling, and administration. We have also included an article on the opinions of management teachers about the effectiveness of participative teaching methods. Our readers will be able to speculate about some interesting implications for teaching in schools as well as for teacher education.

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AJER gratefully acknowledges the continuing financial support of the Alberta Advisory Committee for Educational Studies. For many years AJER was produced jointly by AACES and the Faculty of Education; although publication and management are now the responsibility of the Faculty of Education, the annual grant from AACES is essential for the continuation of the present service to our subscribers.

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December AJER will be a theme issue on Research and Development in Education. The issue is being produced in cooperation with the Alberta Human Resources Research Council and will feature analyses of HRRC's major R and D projects in education.

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Copies of all back issues of AJER are still available. We would appreciate the efforts of our readers in drawing this to the attention of librarians if existing sets are incomplete. An order form is provided on one of the last few pages in this issue.

E.M.

The Alberta Journal of Educational Research
Vol. XVII, No. 3, September, 1971

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The Nature and Functions of Biographical Studies in the History of Education

The biographical approach to the history of education continues to be popular. All too frequently, however, those who employ this approach fail to consider the methodological problems inherent in biographical studies. In this paper, the relationship of biography to history is explored through an examination of the kinds of historical explanation which can be provided by such studies. It is argued that such studies are a legitimate and useful form of historical research but that, due to the 'parochialism' of history of education, their full explanatory potential has not yet been realised.

One of the more noticeable features of the vast body of recent research into the history of education is the large number of biographical studies. Indeed, as early as 1952, Sir Lewis Namier recognized that "biographies have become the ritualist form of English historiography ...[and] predominate as much as portraits do in English oil-paintings ...(Clifford, 1962, p. 188)."

The reasons for their popularity are difficult to give with certainty, although easy to guess. Doubtless the growing interest in biography as a literary form has had its effect (Garraty, 1957, p. 151). It may be that biographical studies do, in fact, perform certain essential functions in the history of education, for as Creighton points out, "We can only understand ideas when exhibited in their application to actual life... [and] movements are only intelligible when described in terms of individual endeavour (Creighton, 1903, p. 305)." The most likely explanation, however, is that on the surface biography appears to be an unexacting form of historical research. Source materials fall readily to hand, and the genre appears to be based upon no formal techniques—a kind of 'go-as-you-please' narrative or account. Just as the reading public selects biography because it is supposed to be easy reading, so the researcher selects it because it is supposed to be easy writing.

It is true that literary critics have, in recent years, devoted considerable attention to the critical study of biography as a literary form, although quite understandably their major interest has been in the complex psychological and aesthetic problems involved in the recreation of character.[1] It is also true that historians and philosophers of history have recently attempted to relate the methodological problems of biography to the broader more fundamental questions of historiography.[2] Unfortunately, this recent and very healthy interest in the nature and possible functions of biographical studies has exercised but a slight influence upon history of education. The relationship of biography to history of education, the kinds of significance which can legitimately be attached to such studies, and the effects of traditional historiography of education upon them, are surprisingly neglected issues.

Positivism, History, and Biography

It is only during the last one hundred and fifty years or so that the biographical approach to history has had to be defended as a legitimate mode of explanation. Before this time, for laymen and historians alike, events in history were felt to be explained most adequately by referring to the thoughts, motives and actions of the so-called 'great men' or 'leading figures'. Ironically, it was in that great age of hero-worship, the nineteenth century, that such 'positivistic' thinkers as St. Simon, Compte and Marx effectively challenged such a mode of historical explanation and understanding. For them, as for all 'scientific positivists', the aim of any enquiry into the nature of man and society should be to discover or establish general laws having both an explanatory and predictive power. In our own century, such an outlook and such a concern have been greatly strengthened by two further developments: (1) the enormous strides made by the social sciences, particularly economics and sociology, and (2) the dominance in philosophy of logical positivism or scientific empiricism, and its more recent offshoot, linguistic analysis.

The intellectual climate produced by such ideas and movements have made it difficult, if not impossible, for historians to avoid being drawn into a debate about the relationship of history to science. For if the essence of science is to be found not so much in the subject matter of an enquiry as in the nature of the explanations it provides, it would seem to follow that no study, not even an historical one, can claim to be exempt from the universal responsibility of all disciplines to try to become scientific. Only the reluctance of historians to abandon their outmoded models of explanation and to adopt the method of science could prevent history from becoming as objective, as methodologically sound, as 'scientific' as any other 'natural' or 'social' science (Hempel, 1966, pp. 95-126). History, in fact, must no longer be looked upon as an 'idiographic' field of study, concerned "to understand the unique and

[1] For a complete bibliography of literary criticism of biography and its relationship to literature, see Garraty's excellent "Essay on Sources," (Garraty, 1957, pp. 261- 289.)

[2] Representative treatments of the problems involved in determining the relationship of history to science, and biography to history are those given by Danto (1963), Dray (1964, pp. 4-20), Mandelbaun (1957), Berlin (1960), and Walsh (1961).

non-recurrent"; rather it must be considered a 'nomothetic' investigation establishing "abstract general laws for indefinitely repeatable processes (Nagel, 1959, p. 203)".

It is easy to see why those who hold such views have been led to the conclusion that there are irreconcilable differences between the natures of biography and history. If history is not concerned with individual actions but with "mass phenomena", then it is the typical rather than the unique which should occupy the historian's attention. Studies of communities, classes, nations, institutions, movements, and 'types' are the only legitimate objects of historical enquiry, while studies of individuals, biographies, which seek to explain the development of a unique personality, are by definition non-historical in nature.[3] Put simply and bluntly, in the attempt to approximate history more closely to those enquiries which are truly nomothetic, some historians and even more philosophers of science have felt obliged to lop off those of its branches which seem to them to be particularly idiographic, including that apparently most idiographic of studies, biography.

There has, of course, been no lack of champions of the autonomy of history ready to do battle with 'scientific' historians and to defend the legitimacy of biographical studies as a form of historical research. However, the dispute has generally reduced itself to a debate about the causal significance of individuals in history and the validity of a 'great man theory' of historical explanation.[4] In many ways this has been unfortunate. Apart from the conceptual confusions generated by the term 'great man', whenever a defender of 'biographical history' becomes involved in an argument about causation in general and historical causation in particular, he fights the battle on grounds of the enemy's choosing. For even if the historian were to grant that biographical studies possess a minimal power to give adequate causal explanations of large scale movements and social changes, it might still be the case that such studies can contribute to an understanding of those 'mass phenomena' which all would agree can be assigned 'causal significance.' A far more useful approach to the question of the relationship of biography to history is to point out and examine the functions which can be assigned to biographical studies in assisting historians of education to explain and understand the past.

Relevance of Biography in History

One of the more penetrating and fruitful analyses of the historical uses to which biographical information can be put is that made by Max Weber (1949, 137ff). Criticizing Meyer's view that biographical facts have little relevance for historical understanding, Weber demonstrates quite clearly the impossibility of labelling any such facts of historical significance or mere human interest until the uses to which they are put are clearly stated and carefully examined. He considers, as an example, the

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[3] See, for example, Meyer's view of history and historical explanation and its refutation in Weber (1949, pp. 137ff).

[4] Good examples of such debates are provided by the views of history expounded by Thayer, Cheyney and Andrews, and discussed by Ausubel (1951, pp. 286-295).

letters of Goethe to Frau Von Stein, and investigates the possible hitorical significance of the facts "which are disclosed by an 'interpretation' of . . . [their] meaning (Weber, 1949, p. 139)."

In the first place, they may be looked upon as 'causally effective' phenomena, links in a causal chain, which explain preceding and subsequent developments. The attempt to establish causes and effects is, of course, a legitimate enterprise in history. Thus,

> to investigate [the] effects [of the letters] in Goethe's 'personality', to trace their influence in his creative work, and to 'interpret' them causally by showing their connection with the events of those years . . . are among the least questionable tasks of literary history (Weber, 1949, p. 139).

Weber, in fact, grants causal efficacy in history to thoughts and actions in the lives of individuals.

It might be argued here that this type of historical-biographical explanation is legitimate only when applied to events in the lives of the 'great men' of history. The decisions and actions of 'minor characters' will rarely, if ever, possess causal significance,—that is, they will not explain how subsequent 'total situations' in a society came about.

But this argument involves a misinterpretation not only of Weber's position but of the nature of history itself. If, in fact, the defining characteristic of a 'great man' is that events in his life and controlled by him possess 'causal efficacy', it follows that no individual can be labelled 'major' or 'minor' until the particular historical problem under investigation has been clearly stated and its spatial and temporal boundaries established. The first mayor of a small town may well be a 'major figure' in any history of the town, and an absolute nonentity in a history of western civilization. The distinction, in fact, fails to discriminate and it is difficult to see what purpose is served by making it.

What is important is that if 'causal efficacy' in determining the course of events be granted to any individual (and the issue here is philosophical rather than empirical in nature), then it must be granted to all; it then follows that biographical information can provide 'historical-causal' explanations and contribute in this way to an understanding of the past.

There exist in addition, argues Weber, other types of historical explanation, ones that are not concerned with the discovery of causes and effects. Consider again the letters of Goethe. It is possible that they could possess no causal significance. Assume that they were lost in the mail, quickly forgotten by Goethe, and only discovered yesterday. In that case, despite their obvious causal ineffectiveness, they might still acquire historical significance as 'heuristic devices'.

To begin with, the letters might reveal something about the personality of Goethe that is characteristic of his uniqueness or genius. Seen in this light they might help make possible a more complete explanation of the "causal nexus" of his life.

Alternatively, even if it is demonstrated that the letters possess no causal significance and that they fail to reveal anything of the uniqueness of Goethe as an individual, they might still operate in another

fashion as a 'heuristic device' and acquire historical significance. They could, for example, represent some thoroughly typical aspect of his age and society.

> In that case, they would not tell us anything new for an historical knowledge of Goethe, but they could... attract our interest as a conveniently useable *paradigm* of that type, as, in other words, a means of knowing the 'characteristic' features of the mental and spiritual attitudes of those circles (Weber, 1949, p. 140).

Such a 'representative significance' can be found in the life of any individual, the question of 'causal efficacy' being ignored altogether. Consider, as an illustration, the decisions and actions of an obscure English clergyman in the late eighteenth century. Caught up in the general enthusiasm for the Sunday School Movement, he establishes a school in his parish and endeavours in this way to improve his 'flock'. While the combined actions of the countless clergymen and laymen involved in the movement caused important changes in English society, those of this one particular clergyman were neither unique nor of great causal significance in the larger societal setting. But as a means of understanding the intellectual, theological and emotional climate of the movement, of ascertaining how schools were established and operated,—in short, of grasping the essence of the movement—a study of this one individual may be considered legitimate historical research. Indeed, in the final analysis, those who engage in such biographical investigations are handling the raw materials out of which have been or will be created the conceptual entities referred to as movements, classes, types and institutions.

Despite its brevity, the foregoing analysis should serve to indicate the variety and complexity of the types of historical explanation which can be given in biographical studies. And it is just this variety and complexity which make it essential for the historian of education to come to an understanding of the kinds of significance which can be attached to decisions, actions and events in the life of an individual. For while it is true that "the most comprehensive methodological knowledge will not make anyone into an historian, (Weber, 1949, p. 115)," it is also true that to ignore such knowledge is very likely to lead to historical malpractice. That such has been the case in a great deal of biographical research into the history of education is painfully obvious to anyone familiar with the literature in this field. Such biographical studies have suffered, in fact, from all the defects of the 'traditional' historiography of education.

Biographical Studies and the History of Education

Cremin has detected in Bailyn's *Education in the Forming of American Society* (1960), three major criticisms of 'traditional' historiography of education (Cremin, 1965, p. 43). They are his denunciations of the sins of parochialism, anachronism and evangelism. All three sins have been freely committed and are clearly evident in biographical studies in the history of education.

Bailyn contends that the parochialism of history of education—that is, its preemption by educators and consequent preoccupation with formal pedagogy—has divorced the field "from the mainstream of historical research" and isolated education from its social context.[5]

The effect of this parochialism upon biographical studies has been profound and unfortunate. In the first place, it has severely limited the selection of research topics, confining them to the so-called 'great educators' of history. More importantly, it has engendered and maintained an overly conservative approach to the treatment of biographical materials. Historians of education in general and particularly those who employ a biographical approach have tended to be content to provide simplistic 'great-man-theory' explanations of educational change and have been extremely hesitant to utilize the explanatory models developed by other disciplines.[6] Their parochialism, in fact, has resulted in a marked lack of innovativeness, an unwillingness to experiment,—and the full explanatory potential of biographical research has consequently not yet been realised.

In order to break down this parochialism, it is essential that historians of education abandon the notion that schools were "self-contained entities whose development... followed an inner logic and an innate propulsion (Bailyn, 1960, p. 9)." They must instead conceive of education as the entire process by which a culture deliberately renews itself. If such a definition of education is accepted, then educational historians will no longer be able to confine themselves to studies of the institutions of formal learning and the men and women who worked in them and prescribed their aims, content and methods. For example, in order to gain "historical leverage" upon the role of education in colonial America, they will find it necessary to pay attention to the kinds of functions biographical studies can perform in ascertaining the educational and historical significance of the Church, the apprenticeship system, the family and the community.

The assumptions bréd in educational historians by their parochialism have also led them to certain incorrect views of the nature of history and change. In their professional concern to search for the origins of those institutions, ideas and practices they themselves were so familiar with, they have tended to see the past as nothing more than "the present writ small". "They lacked the belief, the historian's instinct, that the elements of their world might not have existed at all for others, might in fact have been inconceivable to them (Bailyn, 1960, p. 10)." As a result, the achievement of any real understanding of the past and the process of change was rendered difficult if not impossible. Indeed, as was the case with Cubberley's 'public school ideal', it could cause them to see in the past, that which was not present at all.

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[5] Much the same criticisms of the historiography of education were made by W. G. Shelton in a paper delivered at the Second Western Canada Conference on the Foundations of Education (1965).

[6] It is surely significant, in this connection, that the most innovative approach to biographical explanation in the history of education in recent years has been taken not by an educational historian but by a social psychologist, John McLeish, whose book, *Evangelical Religion and Popular Education* (1970), must surely rank as a major contribution to the historiography of education.

Biographical studies in the history of education have been particularly prone to commit this 'sin of anachronism'. Far too frequently, in the desire to push back the origins of an idea or movement as far as possible, causal links have been pointed out or implied between aspects of the life and work of an individual and later developments where no causal chain can be shown to have existed. At the same time, the historical significance of an individual is seen in terms of the educational beliefs and practices of a future age. It is as if the historical significance of Leonardo da Vinci's 'airplane' designs were to be assessed solely in terms of their causal influence upon the course of aviation design in the twentieth century.

In addition to succumbing to the temptation to give an undue causal significance to individuals in the history of education, the 'educational biographer' has compounded the sin of anachronism by seeking for and invariably finding in the life of his subject a source of educational inspiration and wisdom. Only those who have attempted such a study know how difficult it is to avoid including a chapter usually entitled "The Significance of the Ideas and Work of—for Education Today." Such a chapter can never contain any history; rather it involves a perversion of what was originally thought and accomplished in order to fit contemporary problems and needs. It is, of course, inevitable that the selection of a subject for biographical study must be inspired by present interest, and that this interest will be greatly affected by the state of contemporary education. But the aim of a biographical study should never be the solution of an educational problem; it must always be the solution of an historical one.

The adoption of this principle is perhaps the one sure way to avoid the final besetting sin of the 'traditional' approach to history of education, evangelism, or the desire to popularize through the writing of history a contemporary idea or movement in education. If such a consideration is admitted as a legitimate criterion in the selection and interpretation of 'historically significant' individuals, then the proliferation of studies of people who are supposed to have said and done what we today find emotionally and intellectually satisfying is likely to continue unchecked. The major aim of biographical studies in the history of education must be to describe and explain the ideas and work of individuals as they affected or throw light upon educational thought and practice at that time. Any socially, politically or educationally useful results that come about as a result of such studies must be considered fortunate by-products.

Conclusion

It has been argued that biographical studies are a legitimate source of historical understanding and possess a considerable explanatory potential in the history of education. Due primarily to the parochialism of history of education, this potential has not yet been fully realized. It is to be hoped, therefore, that historians of education will make a determined effort to understand and keep "at the level of explicit consciousness" those methodological principles which have demonstrated their legitimacy and utility within the discipline of history itself.

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Mathematics Learning and Pupil Characteristics

The relationships between such pupil characteristics as intellectual ability, reading ability, ability to make personal and social adjustment, conceptual tempo, socio-economic status, and sex, and mathematics learning in a self-directed (SD), partially teacher-directed (PTD) and teacher-directed (TD) setting were examined. In the SD setting none of the pupil characteristics considered could be used to predict the learning outcomes as measured on a test of initial learning and retention. In the PTD setting there existed significant relationships between the criterion variables and the following factors: intelligence, personal adjustment, social adjustment and reading ability. The learning outcomes for the TD subjects could be predicted on the basis of intellectual ability.

Piaget's theory of intellectual development describes learning as originating from the child and his own interests and drives. The child learns from active interaction with his environment and from doing things that are interesting to him. He explores, experiments, and modifies his behavior and conceptions of the world by means of self-fulfilling drives.

During the first five or six years of his school-life, concepts such as space, time, relations, classes and combinations become available to the child.

> ...these general concepts are the stuff of general knowledge and intelligence. These general concepts of the developing intelligence evolve whether the child goes to school or not because they are not dependent upon specific instruction (Furth, 1970, p. 3).

Piaget's theory, when applied to the elementary school, is suggestive of certain types of learning atmospheres which, according to various authors, would narrow the gap between real life learning and traditional school learning. Duckworth (1964), Sullivan (1967), Harrison (1969), Biggs and MacLean (1969) and Almy (1968) have made suggestions which are applicable to the mathematics classroom in the elementary

school. These include: an active involvement by the learner; manipulation of objects and symbols by the learner; working in a peer group; time by the learner to pose questions, experiment, seek his own answers and to compare his results with other children.

Results from various studies seem to suggest that there exist certain advantages for young children when they are presented with an approach that differs from the expository method. Some advantages of an activity or discovery approach include: better learning and retention (Worthen, 1967); increased fluency in asking questions (Worthen, 1967); high motivating power and sustained enthusiasm (Biggs, 1968); willingness to tackle new problems, attainment of satisfaction and success (Biggs, 1968); and minimized discipline problems (Kaye, 1968). Some counter claims (Worthen, 1967; Ausubel, 1967) include: an increased expenditure of time; possible frustration; unsuited for all learners; and at certain age levels understanding is more general, clearer and more precise when learned through verbal presentation.

The variables which have been shown to be positively related to mathematics achievement include intelligence (Glennon, 1968), reading ability (Glennon, 1968; Romberg, 1969) and socio-economic status (Glennon, 1968). There appear to be differences between boys and girls when mathematical reasoning and computational ability are considered (Glennon, 1968).

Neufeld (1967) points out that there exists some evidence to suggest that the relationship between personality factors and mathematics achievement might vary for different instructional methods. Kagan (1963) suggests that an individual's preferred conceptual strategy is implicated in a variety of behaviors and Cathcart (1969) found that children classified as reflective scored higher on an achievement test than did impulsive children.

Problem

The major purpose of this study (Liedtke, 1970) was to isolate some pupil characteristics which might facilitate learning of mathematics and to examine the role of these characteristics in a self-directed (SD), a partially peacher-directed (PTD), and a teacher-directed (TD) setting.

Null-Hypotheses

The purposes stated gave rise to the following null-hypotheses:

1. For the subjects in the SD (PTD, TD) group there exist no significant correlations between initial learning test scores or retention test scores and the following variables:

a) intellectual ability
b) reading ability
c) socio-economic status
d) ability to make personal adjustment
e) ability to make social adjustment

2. For the subjects in the SD (PTD, TD) group there is no significant difference in mean initial learning test scores or retention test scores of pupils who are grouped as being:

a) reflective or impulsive
b) male or female

Method

Treatments, Materials and Samples

For one of the settings the pupils worked in groups; they solved problems and participated in activities without receiving any formal instruction from the teachers. The pupils worked by themselves and the teachers' main task was to be on hand to answer questions or make suggestions. Answers for previous tasks were written on the blackboard, but checking was voluntary. This setting was labelled Self-Directed (SD).

For the second, or Partially-Teacher-Directed (PTD) setting, a few additional tasks were assigned to the teachers. The topics were formally introduced to the subjects in this group. After a brief formal introduction which usually included the reading of the answers from the previous day's work, explaining the new tasks for the day, giving some examples and assigning the new tasks, the pupils would work in groups just as the SD-Subjects did. The teachers were available to assist the groups.

A third, or more formal setting, was mainly Teacher-Directed (TD). The teacher supervised the checking of the work and explained the new topics to the pupils. The students worked by themselves and assistance was given to them by the teacher on an individual basis.

An activity booklet was prepared which included exercises dealing with such topics as decimal fractions, number pairs, co-ordinates, perimeter, area, numbers in an array, contour lines, scale, networks, regions, multiplication and probability. During a pilot study these topics were presented to a group of grade five students to make the items suitable for this grade level. The activities for the SD and PTD settings were the same, and only a few minor revisions were made for the TD group. These alterations included the revision of activities or questions which implied working with a partner or as a member of a group. An activity booklet was prepared for each of the subjects in the study.

The design of the study required the participation of different groups of students for the three settings. To control in some way for the teacher variable, groups of students were selected from open-area schools. Classes of students were combined for the duration of the study and the direct influence of any one teacher was limited since he worked with another teacher as a team. Since two of the treatments (PTD and TD) required the formal introduction of a topic, the teachers took turns with this task.

A request for six grade five classes from open-area schools was made to the Edmonton Public School Board. Since the method of teaching or presenting the prepared material to the SD group differed somewhat from the textbook-oriented mode of teaching mathematics, an attempt

was made to obtain a school where such an approach had been used as part of the mathematics program. This was considered important since the study lasted only four weeks and a completely new approach would require a great portion of this time for orientation and familiarization. Two schools were included in the study.

School-1 had an open-area as part of the building; however, the majority of the classrooms in this school were of the conventional type. During the day various classes moved in and out of the instructional area. Two grade five classes were located side by side in the open-area. Part of their program was group activity oriented and part of their mathematics program included activities, games and exercises that were not based on any one textbook. These two classes were selected to be part of the SD-treatment.

Two other classes in School-1, whose home area consisted of a conventional classroom, but who moved into the open-area at the same time for part of their instructions, were selected for the PTD-treatment. Their past mathematics experience was textbook oriented.

All the subjects in School-2 were part of the TD-treatment. Some of these subjects shared an instructional area with a group of grade four pupils; however, for the duration of the study all the subjects worked together in one area. In this school mathematics teaching was based on the textbook.

The number of subjects in each of the schools and involved in each of the treatments who completed the study, are summarized in Table 1. Seven subjects were excluded from the study because they missed more than one-fourth of the total number of days during the study, and one subject (PTD) was dropped because he failed to complete any of the activities or tests assigned to him. Of the eight subjects that were excluded from the study, five were from the SD group, two from the PTD group and one from the TD group.

TABLE 1
DISTRIBUTION OF SUBJECTS FOR THE TREATMENTS

School	Treatment*	Boys	Girls	Total
1	SD	30	21	51
1	PTD	32	21	53
2	TD	16	21	37

* SD = Self Directed; PTD =Partially Teacher Directed; TD = Teacher Directed.

Data Collected

Several instruments were used to collect the necessary data. While the study was in progress, the following group tests were administered to the subjects: California Short-Form Test of Mental Maturity (Level 2), California Test of Personality (Elementary-Form AA) and the Para-

graph Meaning Test of the Stanford Achievement Test—Reading (Intermediate I).

Six items of the Matching Familiar Figures Test (Kagan, 1965) were administered individually to each of the subjects. The time taken until the first response was given was measured with a stop watch to the nearest half-second and a record of each response was kept until the correct answer was given. Thus impulsive (fast) and reflective(slow) students were identified in terms of the time taken by each one to respond to the various stimuli presented to them and in terms of the number of incorrect responses each one gave. A median split on both average errors and average time was used to classify the subjects according to conceptual tempo.

To determine a measure of socio-economic status the father's occupation was obtained from the school records and was matched against the occupations listed on Blishen's revised Occupational Class Scale (Blishen, 1964).

All of the subjects wrote a pretest consisting of twenty multiple choice questions which were based on most of the topics presented during the study. A criterion test which consisted of thirty multiple choice items was constructed and it was administered to the subjects one day after the study was completed and again four weeks later to obtain a measure of initial learning and retention respectively. The questions of this test were based on the material that was presented to the subjects during the study. An attempt was made to include different types of questions. One part of the test dealt with recall of the material. A second part required the subjects to apply some generalizations about the material that was presented to them. Another part of the test required the solving of problems that were not confined to the operations and solutions of problems for which a straight-forward procedure had been presented.

Results

The group tests were administered to the subjects during the first week of the study and a measure of each subject's socio-economic status was obtained. The means and standard deviations of these tests for the three treatment groups are summarized in Table 2.

TABLE 2

MEANS AND STANDARD DEVIATIONS OF INTELLIGENCE, READING, AND PERSONALITY TEST SCORES AND S.E.S. FOR SD, PTD, AND TD SUBJECTS

Group	Intelligence	Reading	S.E.S.	Personal Adjustment	Social Adjustment
SD	106.9 (12.4)	34.5 (9.0)	42.0 (10.8)	46.8 (11.0)	49.8 (10.4)
PTD	109.6 (13.5)	39.2 (12.4)	50.3 (14.2)	45.6 (10.9)	49.8 (10.0)
TD	117.6 (8.9)	44.8 (7.2)	62.4 (13.2)	50.8 (9.2)	55.2 (7.9)

Three tests related to the material presented during the study were administered to the three treatment groups. The results of these tests are listed in Table 3.

TABLE 3
TEST RESULTS FOR SD, PTD, AND TD SUBJECTS

Group	Test	Mean	Standard Deviation
SD	Pre	5.96	2.77
	Initial Learning	11.55	2.83
	Retention	12.24	2.83
PTD	Pre	6.38	2.37
	Initial Learning	12.34	3.66
	Retention	12.66	4.31
TD	Pre	7.71	2.91
	Initial Learning	15.89	3.66
	Retention	17.28	3.21

Correlation coefficients (Pearson type) for the variables, and the criteria were calculated and these are presented in Tables 4, 5 and 6.

TABLE 4
INTERCORRELATIONS AMONG VARIABLES AND CRITERIA FOR SD SUBJECTS

Variable	1	2	3	4	5	6	7	8
1. Retention Test	1.000							
2. Initial Learning Test	.642	1.00						
3. Intelligence	.222	.231	1.000					
4. Socio-economic Status	.197	.134	.175	1.000				
5. Personal Adjustment	.020	-.083	.197	.057	1.000			
6. Social Adjustment	-.011	-.137	.292	.030	.745	1.000		
7. Reading	.136	.034	.561	-.115	.345	.485	1.000	
8. Pretest	.331	.277	.154	.065	-.046	-.152	.127	1.000

Note—Underlined coefficients are significant at .01 level.

Since no significant correlations existed between intelligence, socio-economic status, personal adjustment, social adjustment, reading ability, and the scores on the initial learning and retention test for the subjects in the SD group, the corresponding null-hypotheses stated were not rejected.

TABLE 5
INTERCORRELATIONS AMONG VARIABLES AND CRITERIA FOR PTD SUBJECTS

Variable	1	2	3	4	5	6	7	8
1. Retention Test	1.000							
2. Initial Learning Test	.740	1.000						
3. Intelligence	.764	.650	1.000					
4. Socio-economic Status	.291	.313	.378	1.000				
5. Personal Adjustment	.543	.453	.475	.167	1.000			
6. Social Adjustment	.641	.553	.633	.193	.757	1.000		
7. Reading	.742	.623	.802	.237	.542	.702	1.000	
8. Pretest	.449	.411	.391	.172	.312	.289	.314	1.000

Note—Underlined coefficients are significant at .01 level.

For the subjects in the PTD group, significant relationships existed between intelligence, personal adjustment, social adjustment, reading ability and the initial learning and retention test scores. Therefore the corresponding null-hypotheses stated were rejected. Since the relationships between socio-economic status and the two tests scores were not significant, the associated null-hypotheses were not rejected.

TABLE 6
INTERCORRELATIONS AMONG VARIABLES AND CRITERIA FOR TD SUBJECTS

Variable	1	2	3	4	5	6	7	8
1. Retention Test	1.000							
2. Initial Learning Test	.644	1.000						
3. Intelligence	.466	.474	1.000					
4. Socio-economic Status	.042	.285	.050	1.000				
5. Personal Adjustment	-.078	-.208	-.005	.066	1.000			
6. Social Adjustment	.050	.031	.149	-.085	.704	1.000		
7. Reading	.424	.410	.625	.045	.008	.214	1.000	
8. Pretest	.449	.479	.378	.135	.086	.292	.418	1.000

Note—Underlined coefficients are significant at .01 level.

For the TD subjects, correlation coefficients of .466 and .474 between intelligence and the retention and initial learning test scores respectively, indicate that the pupils of high intelligence scored significantly higher on these tests than the pupils of low intelligence. Thus the corresponding null-hypotheses were rejected. No significant relationships existed between socio-economic status, personal adjustment, social adjustment and the scores for the two tests. Therefore, the corresponding null-hypotheses were not rejected. The relationships between reading scores and the initial learning and retention test scores were significant and, consequently, the corresponding null-hypotheses were rejected.

To test the hypotheses which deal with differences of groups formed on the basis of conceptual tempo and sex, *t*-ratios were calculated.

Seventeen subjects (8 male, 9 female) in the SD group were classified as impulsive and eighteen (11 male, 7 female) as reflective. The means for these two groups on the initial learning test were 11.35 and 12.16 respectively. On the retention test the impulsive group had a mean of 12.56; the mean for the reflective group was 12.67. Males in the SD group had a mean of 12.13 on the initial learning test, and the mean for the females was 10.71. For the retention test the means for the males and females were 12.50 and 11.85 respectively. None of the differences in means stated above was significant, and therefore the corresponding null-hypotheses were not rejected.

The seventeen (11 male, 6 female) PTD subjects who were classified as reflective had a higher mean for the initial learning test (14.00) and the retention test (15.82) than the fifteen impulsive subjects (7 male, 8 female) who had a mean of 11.33 for the initial learning and a mean of 10.87 for the retention test. Only the difference in means for the retention test was significant: t(calculated) = 3.910; $t_{(.01, 30)}$ = 2.457, and therefore, the appropriate null-hypothesis was rejected. Since there existed no significant differences between the means for boys and girls on either the initial learning test (male - 12.56, female - 12.00) or the retention test (male - 13.13; female - 11.95) the corresponding null-hypotheses were not rejected.

The means for the fourteen impulsive subjects (9 male, 5 female) in the TD group on the initial learning and retention test were 16.14 and 17.50 respectively. The twelve reflective subjects (2 male, 10 female) had means of 16.08 and 17.45 for these tests. The boys had a mean of 15.81 on the initial learning test and the mean for the girls was 15.86. On the retention test the means for boys and the girls were 17.25. None of the differences stated above was significant and consequently the corresponding null-hypotheses were not rejected.

Conclusions and Discussion

On the basis of the results presented the following conclusions may be drawn:

(a) The non-existent relationship between the variables and the learning outcomes for the subjects in the self-directed group suggests that changes in role or leadership style of the teacher result in different behavior reactions from the pupils. Even such factors as intellectual ability may fail to show up as a reliable predictor of the learning outcomes in such a setting.

(b) When a partially teacher-directed setting is used as part of an instructional program, some types of learners stand to gain more from this procedure than others. In terms of mathematics achievement it would appear that students who make personal and social adjustment readily and are of high reading ability receive the greatest benefit from such a treatment.

(c) In a teacher-directed setting the most important of the variables studied as a predictor of mathematics achievement is intelligence of the child.

(d) Different levels of verbal interaction between pupils and teachers, and pupils and pupils, do not appear to produce differences in mathematics achievement between boys and girls.

(e) A setting which is self-directed will not be disadvantageous for an impulsive child. He will learn, for the first few weeks at least, as well as the reflective child.

In a partially teacher-directed setting reflective children tend to obtain higher scores on an achievement test than impulsive children. Reflective children also retain more of the material when it is presented in such a setting.

(f) When independent group work becomes an important part of an instructional program, most students appear to adjust easily to such a setting. They appear to work eagerly and productively at the tasks presented to them. However, an achievement test administered after a few weeks of such a program will not be a good indicator of the productivity that seems apparent.

(g) In terms of learning outcomes, formal instruction given to a group as a whole at the beginning of a class session appears to be of little value.

(h) The ability to predict mathematics achievement on the basis of prior knowledge appears to depend on the setting in which mathematics is taught.

The results for the SD group seem to indicate that the relationship between the variables included in this study and the learning outcomes as measured on the test of initial learning is interrelated with the role of the teacher. Usually a positive relationship exists between intelligence and mathematics achievement. Similar relationships have been found between socio-economic status and mathematics achievement and between reading ability and mathematics achievement. None of these relationships existed for the results collected from this group. It seems that when the teachers' authority and direct influence is removed from the tasks to be performed, students who usually experience success fail to do so.

The question, "What kind of learner is best suited for this kind of an approach?" could not be answered for the subjects in this sample, since none of the variables included in this study were related to the measured learning outcomes. It can be suggested that when students are introduced to and work in a setting which is self-directed, for the first few weeks at least, variables or pupil characteristics other than those selected are related to success. If this suggestion is correct, an awareness of this fact by the classroom teacher could be of importance since it may prevent him from drawing wrong conclusions. He should keep in mind that when he changes from one teaching strategy to another his usually reliable method of predicting success for some of his students may no longer be valid.

It is interesting to note that no important differences existed between the standard deviations of the pretest for the three treatment groups (Table 3). However, the results in the same table indicate that the standard deviations for the initial learning and retention test were smallest for the SD group. This seems to suggest that a self-directed setting may perhaps produce a uniformity of performance when mathematics achievement is considered.

When compared to the SD group, the teacher in the PTD group had a more direct influence on the subjects and the tasks that were to be performed by them. This teacher influence appears to be directly related to the abilities to make personal and social adjustment on behalf of the students since the learning outcomes for the subjects in this group could be predicted on the basis of these two variables. If the abilities to make personal and social adjustments are related to success in such a setting, how would it be possible to accommodate subjects who lack feelings of personal and social security? If it is true that students of high intellectual and high reading ability receive the greatest benefit from teacher-directions, the question of teacher-effectiveness must be raised. It has been said that this kind of student will "survive" any method and learn no matter what method is used. How then could or should a teacher revise his method to be of maximum benefit for the remaining subjects?

The TD subjects were selected from a different school located in a different area of the city. On the basis of the means for the variables which were considered in this study, it can be concluded that the subjects in this group are drawn from a population that is quite different than the population for the SD and the PTD subjects. The positive relationship that existed between intellectual ability and the initial learning and retention test scores for the subjects in this treatment is in agreement with the results of many other studies which have reported findings on mathematics achievement and intelligence in teacher-directed settings. It would be interesting to know how such a group would fare in a self-directed or partially teacher-directed setting and what would be the relationship between the pupil characteristics and the learning outcomes.

Additional studies are required to determine the influence of particular learner, teacher, content and environmental characteristics on outcomes from different modes of instruction.

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Development of Some Non-Instructional Components of a School System[1]

The administrative, auxiliary, and support components of the Edmonton Public School District were examined from 1944 to 1969. A series of ratios were established comparing these components with various measures of the size of the school district for this time period. The ratios showing the relative growth of the central office administrative staff, central office auxiliary staff, and central office support staff all indicated that the growth of these components have been more rapid than the growth of the entire district. Educational trends, availability of funds, amalgamation, and staffing policies obviously affect the trend of these ratios over time.

The organization of public elementary and secondary education in Canada underwent several major changes during the 1950's and 1960's; these changes included large increases in enrolment and in the size of school jurisdictions. As a result, Canadian public education is now controlled by considerably fewer and much larger school districts than existed in 1945.

Organizational theorists are aware that increasing size is usually accompanied by increasing complexity. One of the major areas of speculation relates to the size and structure of the administrative component as organizations become older and larger (Starbuck, 1965, p. 495). Obviously, relationships between individuals and groups become more complex, and administrative tasks, such as coordination, become more difficult.

Most of the studies relevant to this area of research have been conducted in non-educational organizations. One variable which has been examined in detail in recent studies, in both educational and non-educational organizations, is the "administrative proportion," that is, the

[1] The special assistance provided by personnel of the Edmonton Public School District is gratefully acknowledged.

ratio between the number of people employed in administrative tasks and some measure of organization size.

A commonly accepted hypothesis concerning organizational growth was provided by Parkinson (1957) who maintained that the administrative proportion grew disproportionately with respect to increases in size of the organization (pp. 15-22). Support for this view has been provided by Terrien and Mills (1955, p. 13) in their cross-sectional study of California school districts, and by Gittell and Hollander (1968, p. 53) in a study of growth of large city school systems in the U.S.A. between 1955 and 1965. Terrien and Mills found that the larger school districts tended to have larger administrative proportions. Gittell and Hollander showed that the administrative proportion of the New York school district doubled over a ten-year period, and that of Detroit rose by a third, while those of Baltimore, Chicago, Philadelphia and St. Louis remained approximately constant.

These two studies illustrate different research methodologies used in this area of investigation. The *cross-sectional technique* compares characteristics of organizations of different size at one particular time, and infers that over time the smaller districts through growth will attain characteristics presently possessed by relatively larger districts. *Longitudinal studies* are really historical in that they examine actual development of organizational components over time, and do not involve inferences of the type made in cross-sectional studies. One purpose of this article is to outline a research method which has current relevance to many school districts.

Several studies have indicated that an inverse relationship exists between administrative growth and total system size, that is, the larger systems studied tended to have smaller administrative ratios. Five studies conducted since 1967 at The University of Alberta have demonstrated that this inverse relationship exists for school systems in the four western Canadian provinces. Gill (1967) and Blowers (1969) examined administrative ratios in forty-one systems in Manitoba, Saskatchewan, Alberta and British Columbia. Vithayathil (1969) restricted his research to 108 Alberta school systems which included most of the pupils in the province. These cross-sectional studies counted each administrator as a full unit, even though some principals may have taught for a substantial part of each school day.

In 1970, a study (Lepatski, 1970) prorated administrative time, included all in-school administrative staff (such as department heads), and for the first time in this type of research introduced salaries of various classes of personnel as a variable. In this study, administrative ratios were examined in the seven major metropolitan areas of Winnipeg, Saskatoon, Regina, Edmonton, Calgary, Vancouver and Victoria. In addition to these cross-sectional studies, Blowers (1969) examined each of these forty-one school districts longitudinally over the five-year period from 1964-65 to 1968-69. His findings indicated that the administrative ratios increased for some districts, decreased for some others, while for a few they stayed approximately constant.

A Longitudinal Study of an Urban School District

A recent study examined the relationship between the growth of administrative components of a school district and the growth of the entire school district over time. The Edmonton Public School District (EPSD) was selected for this study partly because of its relatively rapid growth between 1944 and 1969. Some of the findings probably relate to other large school systems; the EPSD is used in this article as a vehicle to demonstrate changes, to illustrate methodology, and to allow for speculation upon reasons for changes over time. No criticism of the EPSD is intended in the observations and comments.

Some of this growth came as a result of its amalgamations with the neighbouring school districts of Beverly in 1962 and Jasper Place in 1964, but in large measure it resulted from rapid increases in the population of the City of Edmonton. The EPSD is responsible for hiring its senior officials; the major *external* effect upon its administrative development may have been various changes in the provincial grant structure over the years.

Personnel files, payroll records, superintendent reports and secretary-treasurer reports were used as data sources. From these, the numbers of schools, pupils, teachers, principals, and central office staff were obtained for the period 1944-45 through 1968-69. Incompleteness of records for 1947 required that some estimates were made. Personal interviews and examinations of school board minutes helped in ascertaining precise job descriptions of many of the central office personnel. The various categorizations were made largely on the basis of the job descriptions obtained from the above sources.

Variables

Numbers of the following components (Table 1 and Figure 1) were used as the raw data.

1. *Total Central Office Staff.*

All people who worked in the central office were placed in one of three major categories:

(a) *Central Office Administrative Staff (COAd)*—included those personnel performing administrative functions in the central office, i.e., those responsible for making the major decisions in the district, and for overall direction and coordination. To provide further detailed information, the COAd was sub-divided into senior, intermediate, supervisory and service categories.

(b) *Central Office Auxiliary Staff (COAx)*—included all personnel working either directly with pupils (COAxP, e.g. psychologists), or on instructional matters (COAxT, e.g. consultants).

(c) *Central Office Support Staff (COS)*—included all personnel performing clerical, secretarial or custodial functions.

2. *Schools.*
3. *Pupils* in day-time attendance.
4. *Teachers*—included principals.

TABLE 1

NUMBERS OF SCHOOLS, PUPILS, TEACHERS AND CENTRAL OFFICE STAFF IN EDMONTON PUBLIC SCHOOL DISTRICT, 1944-1969

Year	Schools	Pupils	Teachers	COAd[a]	COAxP[b]	COAxT[c]	COS[d]	Total Central Office Staff
1969	142	73787	3701	121	38	18	200	377
1968	138	71827	3372	99	35	16	182	332
1967	130	68973	3154	96	28	6	172	302
1966	126	67036	2905	65	23	5	109	202
1965	118	64541	2684	58	20	4	86	168
1964	117	62019	2158	38	11	3	68	120
1963	98	51353	1991	34	10	4	55	104
1962	95	49426	1907	34	10	4	65	114
1961	90	46120	1742	34	10	3	57	104
1960	85	43488	1666	34	8	4	56	102
1959	81	41065	1483	30	6	1	55	92
1958	78	38775	1335	30	5	2	51	88
1957	71	36152	1202	32	4	1	37	74
1956	69	33300	1062	31	4	2	31	68
1955	64	30741	972	24	5	—	26	55
1954	60	28225	855	22	2	—	27	51
1953	55	25572	760	20	2	—	22	44
1952	51	22924	671	19	2	—	17	38
1951	47	20737	609	18	2	—	15	35
1950	44	19404	569	17	1	—	18	36
1949	43	17982	521	14	1	—	16	31
1948	37	16545	476	15	1	—	10	26
1947	33	15768	453	11	1	—	10	22
1946	32	15474	435	9	1	—	9	19
1945	26	15361	428	9	1	—	6	16
1944	23	14852	417	9	1	—	5	15

a. COAd —central office administrative staff.
b. COAxP—central office auxiliary staff working directly with pupils, e.g. psychologists.
c. COAxT—central office auxiliary staff working directly with teachers, e.g. consultants.
d. COS —central office support staff, e.g. secretaries.

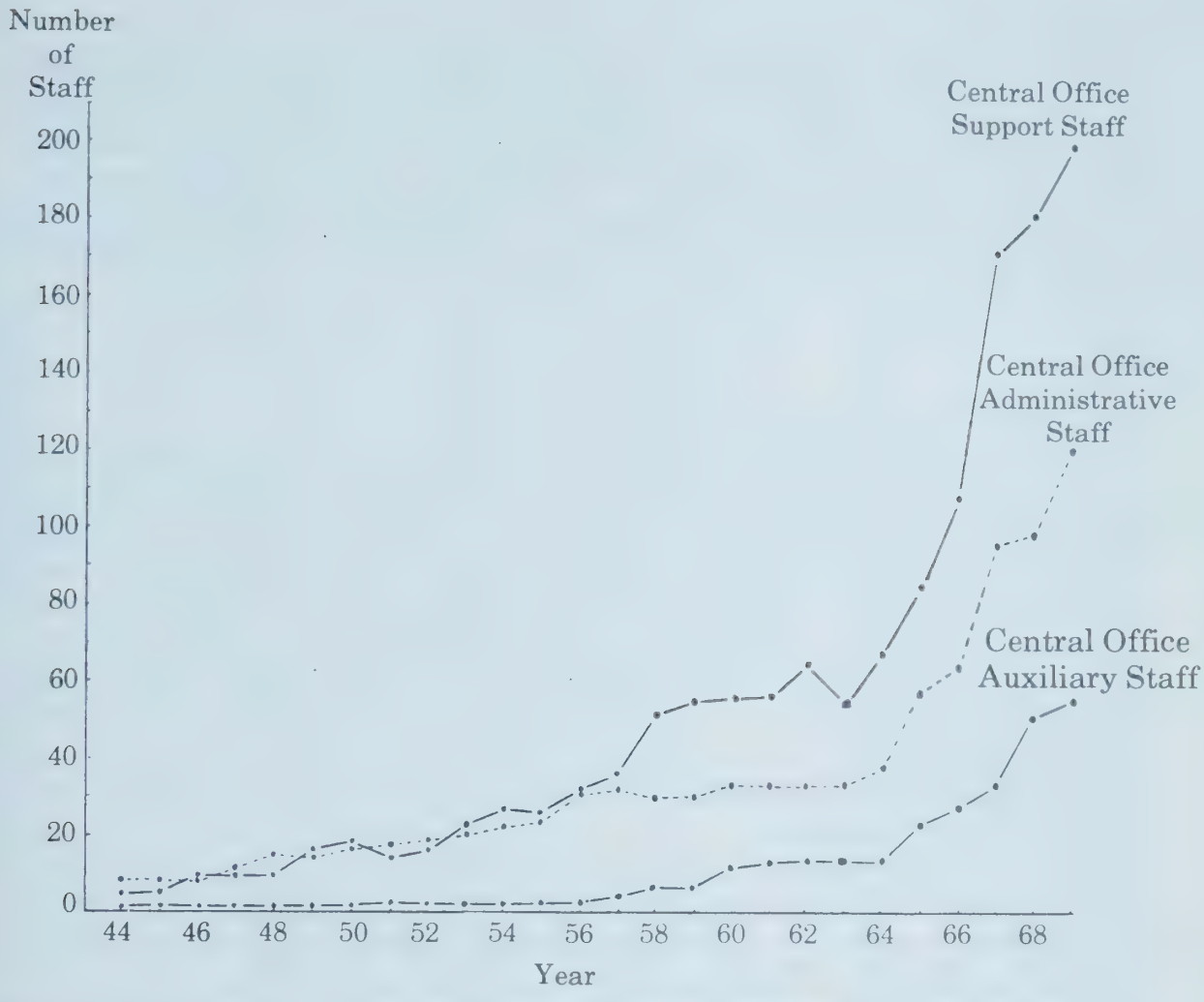

Figure 1. Yearly Changes in Numbers of Central Office Staff, Edmonton Public School District, 1944-1969

5. *Principals*—equalled number of schools.
   Some of the above variables were also combined to form two new variables:
6. *Central Office Professional Staff* = COAd + COAx.
7. *Major Administrative Component* = COAd + No. of principals.

Certain ratios were constructed from these variables, and their values calculated for each school year. These ratios compared the size of a component to a measure of the size of the district. Because of the high positive correlation between numbers of teachers, schools and pupils, use of only one size measure was necessary. In this article, the number of teachers is used, and this is most appropriate because it provides comparison of two measures of staff size in the various ratios. For example, the ratio 100 *COAd:T,* as used in this article, refers to the ratio of the number of central office administrators per 100 teachers. These ratios were then graphed over time for the 1944-69 period, and some generalizations developed. Because the growth pattern from year to year was fairly regular, the graphs obtained using time along the horizontal axis were very similar to those using number of pupils.

Limitations

The available records did not allow inclusion of any in-school administrative personnel other than principals. Obviously, inclusion on a prorated basis of the time spent by vice-principals, department heads and others on administrative tasks would produce a more comprehensive picture of the administrative component. Further, other variables such as complexity can influence staffing ratios, but these were necessarily omitted.

Findings

Central Office Administrative Staff

As shown in Figure 1, the absolute size of the COAd grew less rapidly than did the central office service component (COS = clerical, secretarial and custodial) since 1957. The central office auxiliary component (COAx) also grew more rapidly than the COAd, moving from one-sixth of the latter's size in 1957, to about one-half in 1969. The ratio *COAd:T* declined generally during 1948-1963 from about 0.032 to 0.017, but rose rapidly again to reach the level of 0.033 by 1969. All the ratios are represented in Table 2, and the comparative growth of the ratios is shown in Figure 2.

Further detailed information was obtained by dividing the COAd into the four following categories.

1. *COAd Senior Staff*—included the superintendent; deputy, associate, and assistant superintendents; and the secretary-treasurer. The general trend of the ratio *100 COAdSenior:T* was constant from 1944 to 1958, being about 0.46, then declining to an average 0.28 in 1960-69.

2. *COAd Intermediate Staff*—included all directors, assistant directors, assistant secretary-treasurers, administrative assistants and personnel officers. The ratio *100COAdIntermediate:T* declined from 0.42 in 1948 to 0.13 in 1959, and rose sharply to 0.76 in 1969.

3. *COAd Supervisory Staff*—included all supervisors, assistant supervisors and coordinators. The ratio *100COAdIntermediate:T* declined from about 1.10 in the 1950's to about 0.82 in the 1960's.

4. *COAd Service Staff*—included all purchase planners, equipment technologists, and requisition controllers, as well as directors and supervisors primarily involved in buildings and maintenance. The ratio *100COAdService:T* fluctuated randomly until 1967 when it sharply increased to 1.27, and to 1.32 in 1969.

Central Office Auxiliary Staff

Since 1944 the ratio *100COAx:T* increased fairly steadily from 0.24 to 1.08 in 1967, and then rose steeply to 1.51 in 1968.

1. *COAx—Pupil Oriented (COAxP)*—included psychologists, social workers, speech therapists, remedial clinicians and attendance officers. After fluctuating growth from 1944 to 1964, when the ratio *100COAxP:T* rose from 0.24 to 0.51, rapid increases occurred to a value of 1.03 in 1969.

2. *COAx—Teacher Oriented (COAxT)*—included all subject consultants. Prior to 1956 no such category existed. Since then, the ratio *100COAxT:T*

TABLE 2

RATIOS OF CENTRAL OFFICE STAFF COMPONENTS TO TEACHERS, EDMONTON PUBLIC SCHOOL DISTRICT, 1944-1969

Year	100 (COAd)[a] ÷ (Teachers)	100 (COAxP)[b] ÷ (Teachers)	100 (COAxT)[c] ÷ (Teachers)	100 (COS)[d] ÷ (Teachers)	100 (COAd + COAx + COS)÷ (Teachers)
1969	3.27	1.03	.49	5.40	10.19
1968	2.94	1.04	.47	5.40	9.85
1967	3.04	.89	.19	5.45	9.58
1966	2.24	.79	.17	3.75	6.95
1965	2.16	.75	.15	3.20	6.26
1964	1.76	.51	.14	3.15	5.56
1963	1.71	.50	.20	2.76	5.22
1962	1.78	.52	.21	3.41	5.98
1961	1.95	.57	.17	3.27	5.97
1960	2.04	.48	.24	3.36	6.12
1959	2.03	.40	.07	3.71	6.20
1958	2.25	.37	.15	3.82	6.59
1957	2.66	.33	.08	3.08	6.16
1956	2.92	.38	.19	2.92	6.40
1955	2.47	.51	—	2.67	5.66
1954	2.57	.23	—	3.16	5.96
1953	2.63	.26	—	2.89	5.79
1952	2.83	.30	—	2.53	5.66
1951	2.96	.33	—	2.46	5.75
1950	2.99	.18	—	3.16	6.33
1949	2.69	.19	—	3.07	5.95
1948	3.15	.21	—	2.10	5.46
1947	2.43	.22	—	2.21	4.86
1946	2.07	.23	—	2.07	4.37
1945	2.10	.23	—	1.40	3.74
1944	2.16	.24	—	1.20	3.60

a. COAd —central office administrative staff.
b. COAxP—central office auxiliary staff working directly with pupils, e.g. psychologists.
c. COAxT—central office auxiliary staff working directly with teachers, e.g. psychologists.
d. COS —central office support staff, e.g. secretaries.

was fairly constant at about 0.17 until 1967, after which it rose steeply to 0.47 in 1968 and 0.49 in 1969.

Central Office Support Staff

Between 1944 and 1966, the ratio *100COS:T* rose from 1.20 to 3.75 in an oscillating manner, and then increased to 5.45 in 1967.

Combined Components

The following combinations of the above components were examined to provide additional perspective.

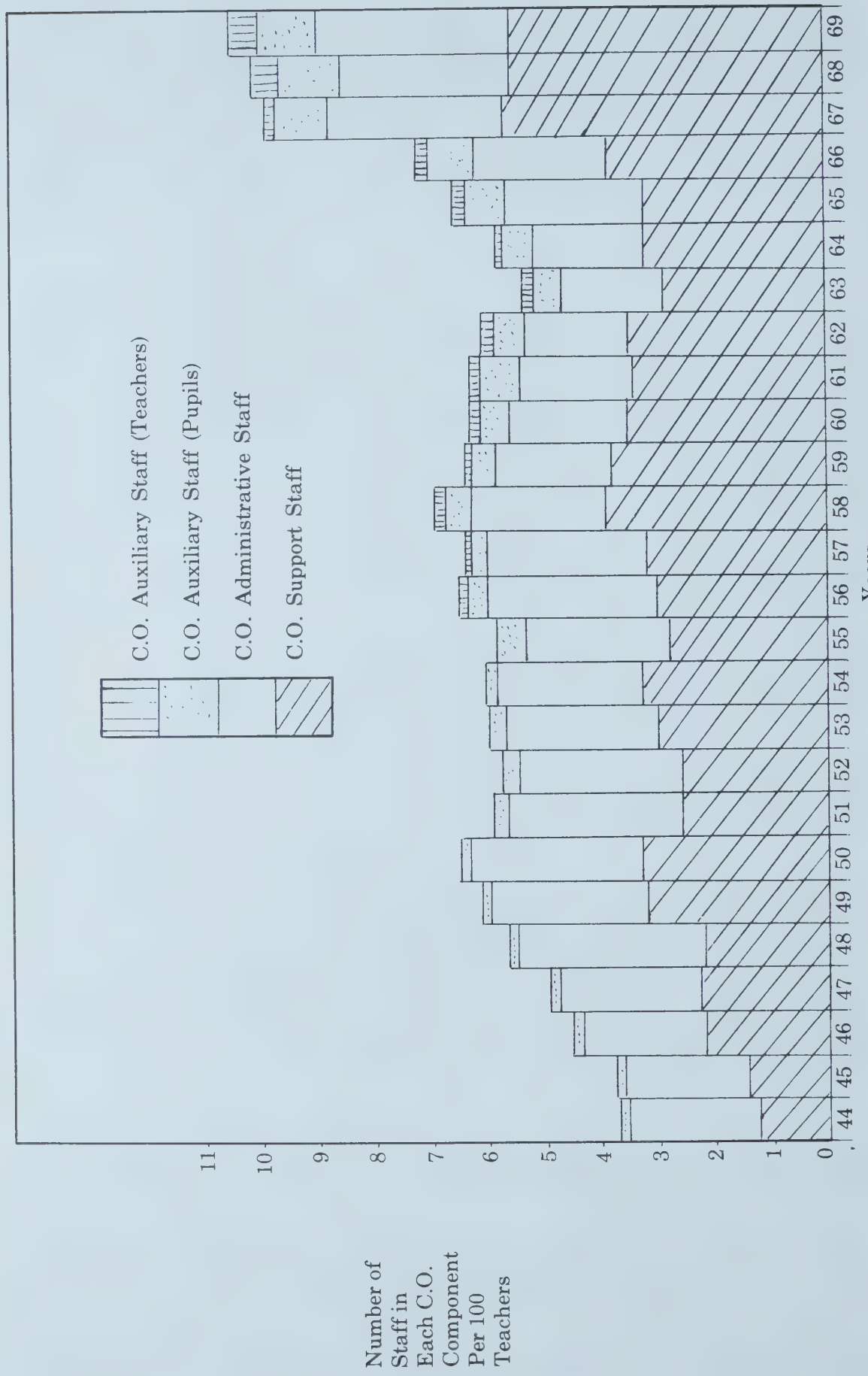

Figure 2. Yearly Changes in Proportions of Central Office Components to Total Number of Teachers

1. *COAd and COAx = Central Office "Professional" Staff.* The ratio *100(COAd+COAx):T* increased slowly from 2.40 in 1944 to 3.20 in 1966, and then to 4.78 in 1969.

2. *COAd and COAx and COS = Total Central Office Staff.* The ratio *100(COAd+COAx+COS):T* fluctuated between 5.22 and 6.95 in the period 1950-1966, and then increased to 10.19 by 1969.

3. *COAd and Principals = Major Administrative Component.* After a general decrease from 10.72 to 7.48 in the 1950's, the ratio *100(COAd +P):T* remained fairly constant at about 6.9.

Discussion

When compared with growth of the system, as measured by the numbers of teachers, overall decreases were noted in the senior and supervisory administrative components. Overall increases were noted in the intermediate and service administrative components, in both the pupil-oriented and teacher-oriented administrative components, in the support component, and in the total central office component. Some of these increases have been more rapid than others, and some large increases occurred near the end of the twenty-five year period. However, without doubt, the relative size of the central office staff has increased, raising several questions.

One question relates to methodology. For the EPSD at least, the conclusion from cross-sectional studies that smaller administrative ratios were associated with increasing size was not supported. This provides some evidence to view such cross-sectional generalizations rather cautiously. Blowers' study (1969) showed that individual school systems had quite variable growth patterns of their administrative ratios, at least over a five-year period.

Apart from the large relative increase in central office support staff, the most marked change probably has been in the increase of auxiliary personnel who provide specialist assistance to pupils and teachers. Why is this so? With broadening of educational functions and services, with the offering of more programs, and with societal demands for more rapid program innovation, increases in these specialist personnel probably has been viewed as essential. One would also hope that the increasing wealth of our society would allow for continuance of such growth. The differentiation of staff titles and functions ("differentiated staffing"), which is currently in vogue, and which will probably continue to be part of the educational enterprise, suggests that school districts should keep detailed longitudinal staffing records as part of their institutional research activity.

Another question relates to the reasons for the cyclical changes which occurred in some graphs of the ratios over time. That is, after increases in some ratios they would decrease for some years before again increasing. Certain suggestions can be offered. Periods of financial restriction probably most directly affect the numbers of non-instructional staff. The appointment of a new superintendent, and/or other senior administrators, with differing staffing ideas from their predecessors, could obviously

affect the relative sizes of various staff components. Further, amalgamation with other school districts can be expected to affect existing staffing ratios for some time after the actual amalgamation.

Other factors can also be involved in variations in the proportions of staff allocated to particular functions. Some of these may relate to conscious *policies*, while others may reflect particular *needs* or changing *values* unrelated to formal policies. For example, certain policies may exist concerning the placement of consultative staff in the central office and/or schools. Changing needs and values are evidenced by increasing provision of more auxiliary specialist staff, by growing recognition that educational administration is a full-time and necessary activity for many people in larger school systems and schools, and by growth of the desire of teachers to have an increased share in the processes of decision-making.

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The Use of Reading Tests for Entrance and Placement Testing in a Community College

The "open door" policy of community colleges is usually associated with rigid testing programs intended to provide useful information to counselors and instructors. The present study was designed to measure the effectiveness of the entrance tests as predictions of success at a community college. One hundred eighty-nine subjects were randomly selected and tested using the Dvorak-Van Wagenen Diagnostic Test and the Cooperative English Test. Grades obtained in an English course and a final grade point average were used as criterion measures in the regression analysis. Results indicated that the two standardized tests used have no value as predictors of success in a junior college setting. The only value the testing program might have would be as a diagnostic service to individuals requesting guidance.

Perhaps the most significant concept to emerge in the recent spectacular expansion of post-high school institutions of education is the idea of a "comprehensive community college" (Campbell, 1970). The term is used in the generic sense and describes an institution which does not grant degrees and which is basically oriented to community service; the nature of such service is highly dependent on the urban or rural location of the college.

The promise of a community college is to provide technical and related forms of training to students for whom the door to post-secondary education would otherwise be closed. The policy labelled "open door" implies that anyone seeking admission to the college is allowed the opportunity to study, regardless of his academic background or his demonstrated capabilities. In the past, the result has been a large dropout rate among students entering community colleges (Campbell, 1970; Bate, 1970). To overcome this problem, some community colleges

provide a rigid testing program which is meant to reconcile student aspirations with realistic educational goals.

In the United States, the American College Testing Program (A.C.T.) is attempting to apply its testing program to the community college. There is some research evidence that the tests used by the A.C.T. Program cannot be used as valid measures or predictors of success in community college settings largely because of the biased sample on which the tests have been standardized (Hoyt, 1966, D'Oyley, 1969). In particular, Hoyt's (1966) research clearly indicated that these tests were not significant predictors of success in freshman courses at a college.

The community colleges in Canada are known more as a "teaching institution" than as a "teaching and research institution" (D'Oyley, 1969). It may be for this reason that standardized tests have not been developed for junior colleges in Canada. Because of the bias represented by the A.C.T. Program, it becomes imperative that more research be done to establish reliable and valid instruments for predictive purposes.

Problem

The present study is an attempt to assess the use of certain entrance tests as predictors of success in the courses chosen by students. The problem is relevant because it assesses not only the predictive value of the current tests used, but also provides the counselors some realistic information for use in their guidance program. With the new "open door" trend, and combined with it the large scale entrance testing, more research is needed to improve counselling services and to enable educators to make valid statements on the basis of test results.

Procedures

Sample

One hundred eighty-nine subjects entering Mount Royal College, Calgary, in 1968 were randomly selected for the study. The sample consisted of 109 males and 80 females; the mean age was 19.3.

Instruments

Of all the entrance tests administered, the following were chosen as independent measures for the study:

1. The Dvorak-Van Wagenen Diagnostic Examination, Form M, Parts 2 and 3.
2. The Cooperative English Test, Form IB.

The Van Wagenen yielded the following nine scales:

1. Perception of relations
2. Vocabulary in context
3. Vocabulary in isolation
4. Range of information
5. Central thought in reading
6. Simple details
7. Completing related ideas
8. Inferences
9. Interpretations

Similarly, the Cooperative English Test yielded four scales. These scales were:

1. Vocabulary
2. Level of comprehension
3. Speed of comprehension
4. Total reading

The rationale for choosing these scales as independent measures was based on research which supports that measures of reading and writing ability provide vital clues to cognitive ability and effectiveness of school learning (McMurray, 1964, Samuels, 1967). Furthermore, psycholinguistic research also indicates that measures of language ability correlate significantly with intelligence and achievement grades (Mann, 1944; Gleser, 1959; Bernstein, 1961, 1962; Lawton, 1963).

Salisbury (1936) stated that thinking occurs in a language. It is a process of organizing incoming ideas—ideas from reading, listening, observing and sense experience. These cognitive processes are clearly related to concept formation, and hence, it is argued, should demonstrate some correlation with achievement scores (McMurray, 1964).

Since language ability has been shown to correlate significantly with achievement measures, the dependent measures chosen for this research were:

1. Freshman English grades as obtained from the instructors.
2. First semester grade point averages.

For the purpose of this study, it was assumed that these criterion measures were reliable indicators of the students' performance.

Analysis

Scores obtained from the entrance tests and from the instructors of English were submitted to a regression analysis. A procedure similar to that of Bottenberg and Ward (1963) was used. For the regression analysis the following assumptions were made:

1. The distributions of the criterion scores were normal.
2. Each array of the predictor variables had the same overall variance.
3. The prediction of the criterion from the independent measures was linear.

Multiple linear regression models were constructed and an *F*-Test used to test for significance; the critical level of acceptance was set at the .05 level.

Results

It seemed evident after examining the correlation matrix that prediction analysis might be superfluous because of the rather low correlations obtained between the independent and dependent measures. Some significant correlations did occur but only between those variables denoted as criterion measures and between some scales on the Reading Tests. Logically, these correlations should be statistically significant.

The first set of regression models assessed the predictive ability of the nine Van Wagenen scales for English grades (see Table 1). As can be seen, these scales were not found to be useful as predictors for either the males or females.

TABLE1
R-SQUARED OBTAINED IN USING NINE VAN WAGENEN SCALES TO PREDICT ENGLISH GRADES

Group	N	R-Squared	*F*-Ratio
Female Students	80	.167	1.44
Male Students	109	.030	.43
Total Group	189	.020	.46

The second set of regression models tested whether the same nine scales on the Van Wagenen test would predict grade point average significantly different from zero (see Table 2). Again, the results were not statistically significant for either male or female subjects; however, when the two groups (male-female) were combined, a significant *F*-value was obtained. The needed *F*-value in the latter case was lowered considerably because of the size of the sample.

TABLE 2
R-SQUARED OBTAINED IN USING NINE VAN WAGENEN SCALES TO PREDICT GRADE POINT AVERAGE

Group	N	R-Squared	*F*-Ratio
Female Students	80	.224	2.08
Male Students	109	.126	2.01
Total Group	189	.120	3.12*

* Significant at the .05 level

The results in Table 3 indicate that Cooperative English Test scales for the total group can be used as significant predictors of an English grade but not as predictors of grade point average (see Table 3). It may be that English grades have a higher correlation with the Cooperative English Test scales (although not significantly higher) than these same scales have with grade point average. This may account for the difference in a significant *F*-value for the criterion measures.

A final test was made to assess the predictive validity of the English grades with grade point average as the criterion. Our hypothesis was that this should yield a significant *F*-value since these two measures are significantly correlated both statistically and theoretically. The analysis yielded an R-Squared of .471 and an *F*-ratio of 15.66. This indicates the usefulness of English grades for predicting grade point average. This latter result seems reasonable and is consistent with findings in the literature.

TABLE 3
R-SQUARED OBTAINED IN USING FOUR COOP READING SCALES TO PREDICT ENGLISH GRADES AND GRADE POINT AVERAGE FOR TOTAL GROUP

Predictors	Criterion	R-Squared	*F*-Ratio
Coop Reading Scales	English Grade	.043	2.80*
Coop Reading Scales	G.P.A.	.036	2.30

* An *F* of 2.41 was needed for significance at the .05 level.

Discussion

The results of this study clearly confirm Hoyt's (1966) and D'Oyley's (1969) findings that standardized tests such as the Van Wagenen and the Cooperative English Test have little, if any, value as indicators of performance in freshman courses at a community college. The low correlations obtained between scores on the entrance tests and the criterion measures seem to imply that, for this sample at least, not even the theoretical relationship expected between measures of language ability and achievement grades is supported.

One can offer several reasons why no statistically significant relationships were obtained. The most obvious one would be that the sample, although randomly selected, did not represent the normal population of students entering a junior college. The "open door" policy may attract students who show little success on standard achievement tests but who, because of a high degree of motivation, may still succeed in the college classroom. On the other hand, the reverse may also apply: those individuals scoring high on the entrance tests may *not* be successful in the classroom achievement tests. Secondly, the standardized tests, which report reasonably high reliability coefficients, may not be valid for the sample on which the present study was based. This suggests that further research is needed to establish local norms for these tests. Thirdly, is it possible that grades given to these students are also not reliable as an indication of the students' performance? This is a problem not only in community colleges but also in secondary schools and at the universities.

The findings of this study have significance for counselors who wish to use test results for predictive or placement purposes. It is obvious that blanket statements regarding probable success or failure at a college cannot be made solely on the basis of a test score. This is not to say that entrance testing should be terminated; the results do support some limited use of test scores as predictors of success in a community college. Both the Van Wagenen and the Cooperative English Tests have some minimal predictive validity, although not as high as may be practically useful for counselors. At any rate, counselors and student advisors may well use subscale scatter and strengths indicated in the test scores to provide some guidance.

The goal of future research in community colleges should be set in the direction of establishing local norms for entrance tests. Furthermore, selection of a combination of tests that relate to specific curricula or specific programs would be advisable if educators want to make meaningful statements to students seeking guidance.

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Learning Spelling Through the Use of Electric Typewriters[1]

The purpose of this study was to compare the spelling performance of grade four students who studied word lists using electric typewriters (N=34) with those who studied the same lists by the more conventional methods (N=26). The experiment was conducted for ten weeks; each weekly list included fifteen words. An analysis of covariance design was used with intelligence scores and pre-test spelling results as the covariates. There was no significant difference in spelling performance; however, the learning of typing skills emerged as a secondary gain for the experimental group.

Although spelling instruction has been considered a relatively simple matter when compared with instruction in such subjects as mathematics and sciences, "recurring dissatisfaction with spelling ability indicates that attainment of desirable instructional results is not a simple matter" (Horn, 1969). According to Shane (1955), the instructional methods used in spelling should be based upon: 1) factors conditioning spelling ability; 2) roles of direct instruction and incidental learning; 3) modes of representation; 4) the role of spelling in other curricular areas; 5) utility of learning generalizations; and 6) the role of tests. While superior intelligence is not a guarantee of superior spelling ability, positive correlations have been consistently reported between spelling ability and intelligence. In light of the influence language factors have for intelligence scores, this is not surprising (Newton, 1960 and Oswalt, 1962).

An important factor in the learning of spelling, as in all learning, is motivation. Motivation in learning is affected by teacher and student attitudes and interest; the level of student motivation; the set to learn

[1] Special acknowledgements and thanks are due to the following persons who made this research study possible: Dr. O. P. Larson, Superintendent, Lethbridge Public School District; Mr. F. J. Clark, Principal, Galbraith School; Mrs. B. Nixon and Mr. Thompson, teachers of the classes involved, and Mrs. Dogterum, secretary at Galbraith Elementary School.

and remember; work habits; instructional methods and their utilization; and self-confidence. The enthusiastic use of the most efficient instructional methods and the student's awareness of his progress are probably two of the important sources of student interest and motivation (Chase, 1949 and Horn, 1967). With these last two concepts, in particular, in mind, the investigator decided to conduct an experiment concerning the teaching of spelling to grade four students using electric typewriters which were assumed to be an efficient and effective means of instruction and motivation.

Purpose of Study

The primary purpose of the study was to teach *spelling* not *typing*. Electric typewriters were selected so that grade four students who lacked finger strength would find it easier to manipulate the typewriter keys.

A secondary benefit, however, was to have the student use the correct finger for the proper key on the typewriter. The student was permitted to look at the keyboard while hitting the correct key with the appropriate finger, so it was not to be misconstrued as touch typing. It was assumed that when the student later was learning typing, it would not be too much of a problem to adjust to touch typing by ceasing to look at the keyboard.

The following research hypothesis concerning the learning of spelling by grade four students using electric typewriters was formulated:

> A group of grade four students learning spelling by the use of electric typewriters will demonstrate superior performance in spelling when compared to a group of grade four students learning spelling by the conventional method.

Method

Sample

Participants in the experiment were two grade four classes in the Galbraith Elementary School, Lethbridge Public School District, Alberta. The experimental group consisted of 34 students and the control group comprised 26 students.

Design

Because the students in the two groups were not matched, the results were analyzed using an analysis of covariance with pretest spelling scores and intelligence scores as the covariates. The analysis of covariance permits *statistical* rather than *experimental* control of variables; it is one of the most valuable tools of statistical inference. "Much educational research can be improved by introducing the analysis of covariance after the experiment has been completed (Roscoe, 1969)", and "the use of this more precise analysis which seems highly desirable (Campbell and Stanley, 1963)."

Materials

After consultation with the two teachers concerned, it was decided to compile ten weekly lists of fifteen words each from the prescribed list *Basic Goals in Spelling Book IV* by Kottmeyer (1965). The experiment was conducted for ten weeks during the Fall of 1969. From the ten weekly word tests, a pretest was developed by randomly selecting two words from each weekly list so that the pretest comprised 20 words. A similar procedure was followed for constructing the post-test.

Instructional Procedure—Control Group

The control group learned their spelling word lists by the conventional manner of writing them out, pronouncing them, syllabicating, using them in sentences which formed a story with a trial test and writing a final test on each weekly list of words.

Instructional Procedure—Experimental Group

On Monday of each week, the meanings of the fifteen words to be studied were discussed by the teacher with the experimental group of students.

Six electric typewriters were located in a separate room which had previously been the principal's office. Six students at a time from the experimental group attended 20 minutes of typing each school day on the electric typewriters. The students were instructed and supervised by the school secretary who was extremely competent and enthusiastic about the experiment.

Mounted on the wall of the typing room were large keyboard diagrams showing the students which fingers were to be used on the keys. In addition, each student had a small diagram alongside the typewriter. To allow for a period of familiarization on the typewriter, the experimental group spent five, twenty-minute sessions (a week) on the electric typewriter before the experiment commenced.

At first, the student was required to type the words in pairs, five times. Each student had a weekly list of words alongside his typewriter. At the secretary-teacher's suggestion, this procedure was modified after four weeks to placing the words in simple sentences. It was felt that this was more motivational than the repetitious typing of the same word.

Testing—Regular Progress

At the end of each week, the control and experimental groups were tested by their respective teachers on the fifteen words studied. The experimental group (who learned their words on the electric typewriters) wrote the tests by hand because only six typewriters were available.

Testing—Pre and Post

At the beginning and end of the ten-week experiment, the pretest and post-test which consisted of words randomized from the weekly word lists were administered to both groups.

Results

Table 1 shows that using the pretest spelling test as a covariate, the *F* value is not significant and therefore there was no differences between the experimental and control group in the outcome of their performance in spelling.

TABLE 1
RESULT OF ANALYSIS OF COVARIANCE FOR EFFECT OF PRESPELLING

Source	SS	df	MS	F
Total	328.82	58		
Error (within)	316.35	57	5.55	
Treatment (group)	12.47	1	12.47	2.25*

* F value Not Significant

Using intelligence as the covariate, Table 2 indicates that there is still no significant difference on the *F* value though it is very close to being significant.

TABLE 2
RESULT OF ANALYSIS OF COVARIANCE FOR EFFECT OF INTELLIGENCE

Source	SS	df	MS	F
Total	451.18	58		
Error (within)	450.87	57	7.90	
Treatment (group)	.31	1	.31	3.96*

* F value Not Significant

The hypothesis that grade four students who learn spelling by the use of electric typewriters would be more successful than students learning by conventional methods was rejected.

Discussion

While the results of this study indicate that there was no significant difference among the performance of the two groups learning spelling by two different methods, a definite secondary gain for the experimental group was the learning of typing skills. Also, the effect that the use of electric typewriters had on the motivation of the experimental group was considerable, even though it did not result in a superior performance.

Although the experimental group spent only twenty minutes per day on the electric typewriters, by the end of the ten weeks, several of the better students could type a page and a half of double space typing in the allotted time with practically no errors. This raises the question of whether students begin learning to type soon enough.

As far as improving instructional approaches to the teaching of spelling is concerned, it may be that the best possibility lies in the use of computer assisted instruction where the student can be instantaneously reinforced for his correct spelling of a word.

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Effectiveness of Participative Teaching Methods

A survey was carried out with a sample of European management teachers concerning the rated effectiveness of sensitivity training, Harvard case method, incident method, abbreviated case method, business game, field study trip and management consulting in different learning domains. The results suggest the hypothesis that most of the methods in question can be used for teaching several different skills, yet each method has its peak of effectiveness, its "comparative advantage" over all others. The methods therefore appear to be complementary to each other rather than substitutes for each other.

Problem

Participative teaching methods are used in management schools in an attempt to improve the students' management skills; however, relatively little is known about the effectiveness of different methods for developing different skills. The purpose of this study was to determine how management teachers rated the effectiveness of seven participative teaching methods on ten criterion variables. In our survey we were guided by the theoretical model of Hawrylyshyn (1967) who specified the differential impact of teaching methods on a number of managerial skills (p. 31). Figure 1 shows how the different methods presumably peak on different skills. Hawrylyshyn's model poses only a relation of teaching methods and managerial skills, while we designed the study to receive also data for the remaining learning domains.

Procedures

Sample

The sample included those management teachers who were members of the International University Contact (IUC) as of December, 1969. From this group we selected those who had a full-time teaching responsibility in the following countries: Holland, Belgium, Germany, Spain, Italy,

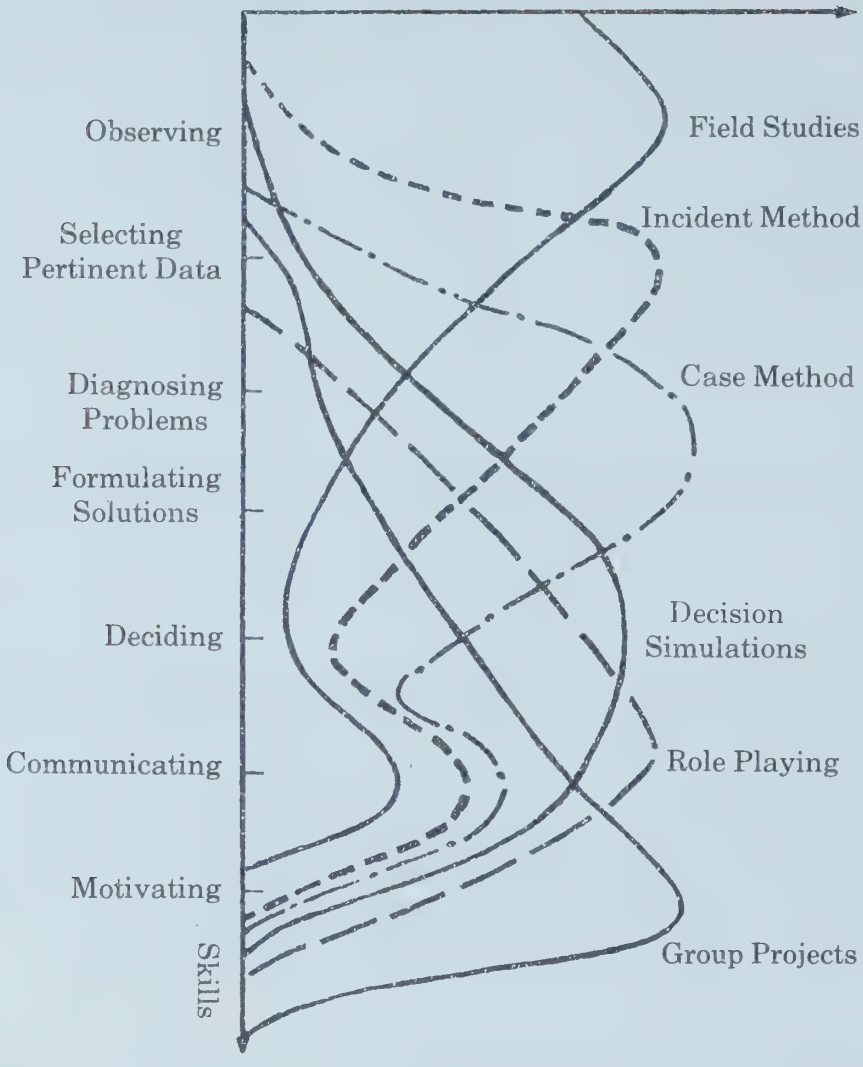

Figure 1. Effectiveness of Participative Teaching Methods

France, and Switzerland. The questionnaire was sent to 207 teachers; 55 of these replied. A non-respondent study was not carried out.

Questionnaire

The questionnaire consisted of the 20 items related to the following 10 variables:

OBS = skill of observing-identifying, being aware of problems when presented with a situation.
SEL = skill of selecting-differentiating the relevant from the irrelevant.
DIA = skill of diagnosing-identifying relationships.
SOL = skill of formulating solutions-elaborating different courses of action.
DEC = skill of taking decisions, or choosing between different courses of action.
KNO = knowledge or acquisition of business principles and techniques.
ATT = attitudes toward other people (understanding of others).

WOR = working with other people.
MOT = motivation or interest for further study.
VAL = affect in personal values.

Each variable was represented in the questionnaire by two items The respondents were requested to evaluate the effect of different teaching methods on each of the 20 items by using a 7-point scale.

The seven participative teaching methods were briefly described and as hand-out given to the teachers. The following methods were to be rated:

1. *Sensitivity Training:* (T-Group Training or Group Dynamics) Sensitivity training takes place in a relatively unstructured group in which individuals participate as learners. The data for learning is not outside these individuals nor remote from their immediate experience within the group.
2. *Harvard Type Case:*
   This is a very lengthy case which also includes data not pertinent to the problems. The style is in the form of a running narrative; class members and instructors have equal access to the necessary information.
3. *The Incident Method:*
   A bare incident is reported to the students; the incident as such implies very little information. But there is other relevant information known only to the discussion leader.
4. *The Abbreviated Case:*
   The abbreviated case includes only data pertinent to the problem.
5. *The Business Game* (Management Simulation Game):
   The three basic components of a simulation game are an abstraction of an economic environment, or a model; a series of rules for manipulation of this model, or simulation; and a set of rules which govern the activity of the participants in relation to the simulation, or game.
6. *The Field Study Trip:*
   The field study trip is characterized by the following essential elements:
   a) a field study involves a visit of one or more days to one or more companies.
   b) the participants must meet the decision-making people in the company.
   c) the field trip must be preceded by a well-prepared examination of the company in general and the expected problems in particular.
   d) the participants have to report on their studies in the field.
7. *The Management Consulting:*
   The students or participants are engaged in management consulting work for interested companies. This takes place so that the students form a task force and work on the spot for an enterprise. Essential characteristics of this method are: forming a group, working in the field, treating the problem jointly and writing a report.

Analyses of Data by Method

The first analysis of the data thus gathered, consisted in an analysis of variance of each method separately. The purpose of this analysis was to find out whether the teachers attributed different effects on the ten variables within each of the seven methods.

Figure 2 presents the results obtained with all seven methods, but it should be remembered that each analysis is independent from the others, i.e. one cannot compare the results obtained within one method with those obtained in another.

Within each method the bracketed variables mean that the differences between these variables are not statistically significant at the .05 level.

Figure 2 can be taken as it is and the interested reader draw his own conclusions, depending on his purpose. We shall, for our part, try to see whether there is some structure in these results, in order to better understand the table as a whole. For this we shall extract, for each method, the highest and lowest variables (or set of variables) that are statistically different. In other words, we shall look at the points or set of points of greatest contrast, for each method.

Sensitivity Training

The two sets of variables at the low and high end of the scale are respectively (KNO — SOL — DIA — DEC — OBS — SEL)and (WOR — ATT — VAL). The differences between the variables within each set are not statistically significant. The variables in the first, low ranked set are all the variables of the problem-solving skills, plus knowledge. On the high ranked set we find variables of the personal (VAL) and interpersonal type (WOR — ATT). Thus sensitivity training is evaluated as affecting more the personal-interpersonal characteristics, than the cognitive (problem-solving) skills.

In the Hawrylyshyn model, sensitivity training is represented by role playing, which is given a peak effect on the skill of communicating with others, and little effect on problem-solving skills. A difficulty with this model is that the effects of the method are graphically represented by a curve and what would constitute a "large enough" difference between two points on this curve, is not specified. If we take any difference as being meaningful, then role-playing has no effect at all on observing and selecting data, some in diagnosing problem, more in formulating solutions and even more on deciding. From this, severe, point of view, the results obtained are not in accord with the model, since the differences between the problem solving skills are not statistically significant (c.f. Figure 2). If we take a less severe stand and compare only the highest and lowest points of the curve, the results of the survey tally with the model.

Harvard Type Case

The two contrasting sets are (VAL — ATT — KNO — DEC — MOT) and the upper end (DIA — OBS — SOL — SEL).

The evaluation is nearly exactly the inverse to that given to sensitivity with problem-solving skills being more affected than personal-interperson-

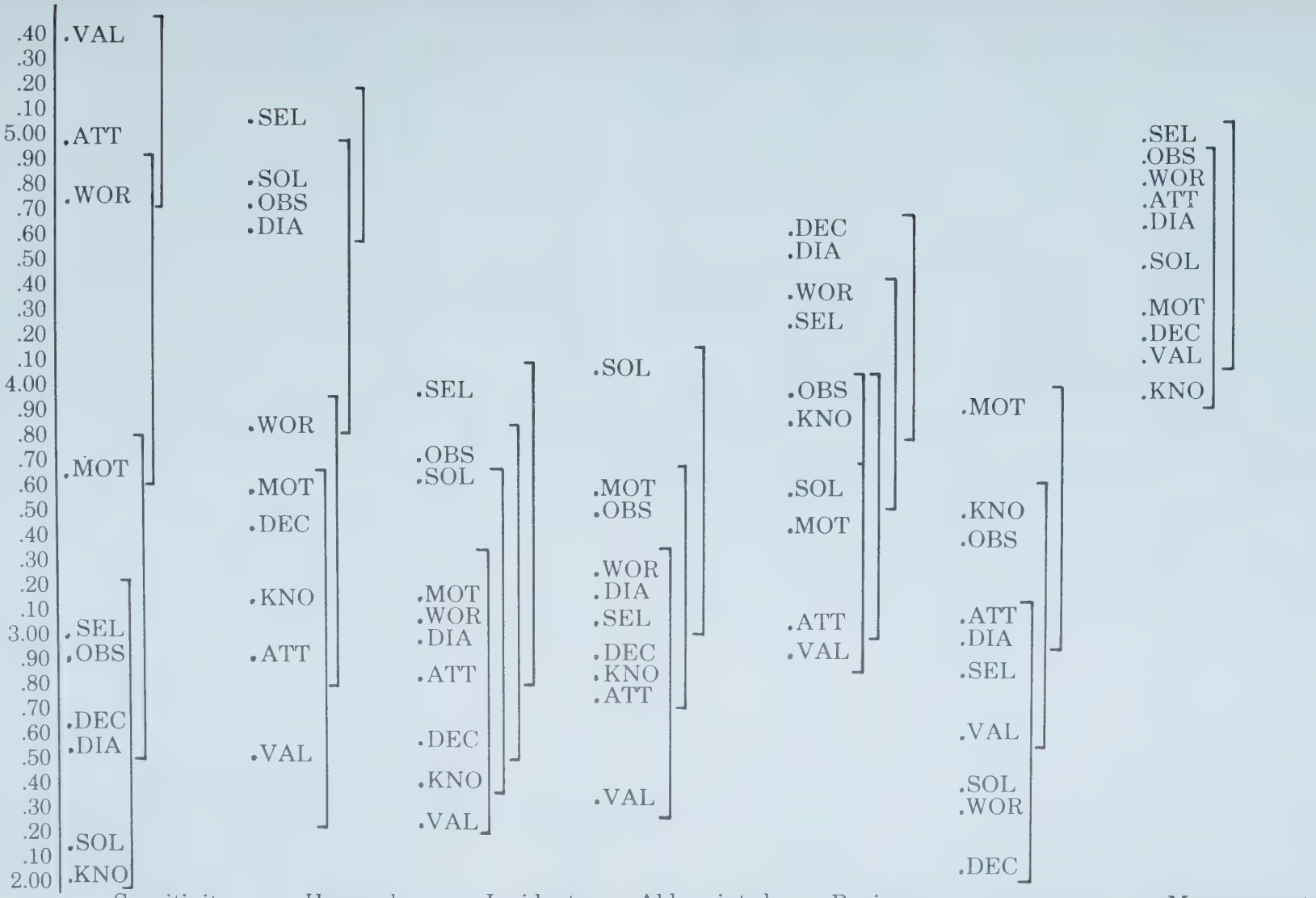

Figure 2. Analyses Method by Method

al characteristics. The problem solving skill of deciding is however included in the low ranked set.

In the model, the case method is high in diagnosing and formulating solutions, lower in deciding and selecting, and nil in observing. The results of the survey do not make any difference between diagnosing, solutions, selecting and observing, but all these are different from deciding (in general the respondents do not seem willing to make any distinction between the first four mentioned skills). Thus, there is a very partial fit between the opinions of teachers and the model.

The Incident Method

The results obtained here do not permit forming two contrasted sets of points but a contrast between one point and set. Moreover, this can be done in two ways either by taking the lowest variable or the highest variable. The alternative maximum contrasts are thus:

a) VAL v/s SOL — OBS — SEL, or,

b) VAL — KNO — DEC v/s SEL

Contrast a) indicates a higher ranking of 3 out of the 5 problem-solving skills, compared to a low ranking of a personal characteristic. Contrast b) indicates a high ranking or selecting against the personal characteristics plus the problem-solving skill of deciding and acquisition of knowledge.

In the model, the incident method has its peak in selecting data, followed by diagnosing, solutions, deciding and observing in that order. In our results, deciding is differentiated (lower) from selecting, all other differences not being significant. Thus again, a very partial fit is found.

Abbreviated Case Method

As for the incident method, two alternatives are possible:

a) VAL v/s OBS — MOT — SOL

or

b) VAL — ATT — KNO — DEC v/s SOL

The contrast between personal characteristic and problem-solving skills breaks down here. We find in alternative a) MOT in the high set. If we compare this method to its big brother the Harvard Case, we find that the difference (as given to the teachers who filled the questionnaire) is in the length of the case. Our respondents seem to be saying that with a "small" case as compared to a lengthy one, the motivation to study further is as much affected as the problem-solving skills (DEC excepted). Notice that we are not saying that motivation is higher in the abbreviated case method as compared to the Harvard Case, since in this analyses we cannot compare a variable between two methods.

No distinction in the model is made among different kinds of cases.

The Business Game

The contrast here is

VAL — ATT — MOT v/s SEL — WOR — DIA — DEC

The contrast between personal and problem-solving skills is apparent. The variable WOR, working with others is however in the high ranked

set, thus denoting the specific character of the business game which is always a competition between teams. It is interesting to note that the other interpersonal variable, attitudes toward others (ATT) is in the contrasted set to that which includes WOR. Thus the respondents consider that the business game affects working with others, but does not affect as much the "understanding" or the attitude toward others.

In the model, the business game has its peak in deciding and communicating with others, followed by solutions, diagnosing, selecting and observing. Deciding and diagnosing are different from solutions, the other differences not being significant (c.f. Figure 2). Thus only partial support is again present for the model.

The Field Study

The contrasted sets are:

DEC — WOR — SOL v/s OBS — KNO — MOT

The field study is considered more a method for receiving input (OBS — KNO) and increasing the interest of the student (MOT) than for attaining the skills of deciding and proposing solutions, or for team work.

In the model, the peak for field study is in observing, followed by selecting data, diagnosing, solutions and deciding. The results in Figure 2 show that observing is different from solutions and deciding. The fit here is distinctly better than with the other methods.

Management Consulting

Only two points are contrasted in the answers obtained:

KNO v/s SEL

It should be noted however (c.f. Figure 2) that all the variables in this method are ranked very high, with very little dispersion between them.

Management consulting is not included as such in the model.

Summary of First Analysis

As an overall statement on the first analysis, we can say that the rated variables are well differentiated among themselves, in two methods, sensitivity training and Harvard Case, and that the contrast is between personal-interpersonal characteristics and problem-solving skills (with the order reversed between the two methods). The differences between variables is nearly nil in the case of management consulting, with all the variables however rated very high.

In the remaining four methods, the contrast between personal-interpersonal characteristics and problem-solving skills is not as clear cut (but is however there) and other specific aspects appear (i.e. belong to the "wrong" set of variables): motivation of students in the field study and the abbreviated case, team work in the business game.

A further and last point should be noted: the skill of "deciding" is included in the set of problem-solving skills only in the sensitivity training and the business game methods. In the other methods, when DEC appears, it does not belong to the problem-solving set.

Regarding the fit between the obtained results and the Hawrylyshyn model, it is rather feeble in all cases, if we consider all the points of the curves in the model as being "significantly" different. If we consider only the peaks, then the opinions of the teachers are quite in accord with the model.

Analyses of Data by Variables

The same data have been analyzed in another way, by carrying out an independent variance analysis on each of the ten variables, taking each time the seven methods together. In this way, we can appreciate how the respondents compare the effects of the seven methods on any given variables (see Figure 3).

As in Figure 2, the brackets signify that the methods included in the brackets are not statistically different at the .05 level of significance. For example, concerning the variable KNO (knowledge), management consulting, business game, field study and Harvard Case are not rated differently.

The following comments can be made concerning this table:

—in only one out of the ten variables, we find no differences between the seven methods, namely motivation. Thus, this variable is seen as being equally affected by all seven methods.

—management consulting is consistently ranked at the top (or next to) in all ten variables without exception.

—for two variables, attitudes and values, the seven methods separate into two clusters without overlap.

—management consulting, the Harvard Case and the business game are rated close together (are not significantly different) on all the variables, except two: attitudes and values.

—similarly, sensitivity training, the incident method and the field study are close together on all variables except three: attitudes, values and working with others.

—management consulting and the Harvard Case are significantly different from sensitivity training and field study on four of the problem-solving skills. On the fifth one—deciding—management consulting and the business game are significantly different from sensitivity training, field study, the incident method and the abbreviated case.

Regarding the Hawrylyshyn model, the results obtained do not concord very well with the hypotheses.

For observing, the model postulates that the field study is very high, the other methods (case, incident, business game, and role play) being very low. Reference to Figure 3 shows no agreement with such a hypothesis.

Similarly, for selecting data, where the model postulates that the incident method and field study are high, the other methods are low. For diagnosing, the case and the incident method are high, the other methods low. In our results, only the hypothesis concerning the case method is borne out.

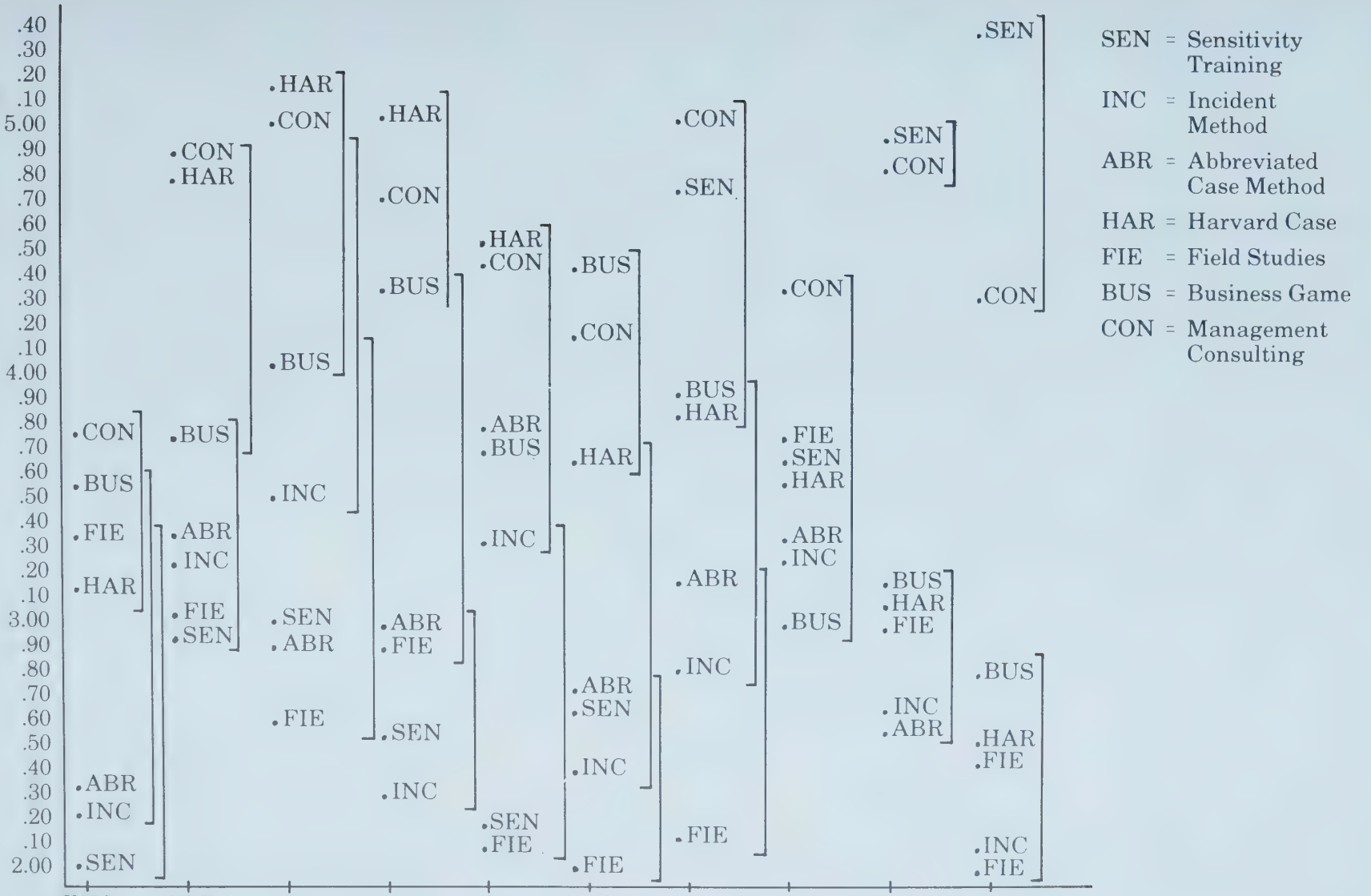

Figure 3. Analyses Variable by Variable

For solutions, the case is postulated as being high, nearly as high as the business game; the incident method, role play and field study being lower. Here there is a good fit between the survey results and the model.

For deciding, the business game and role play are high, the other methods are low. The results confirm only the results obtained for the business game.

Thus on the whole the results and the model agree for the skill of formulating solutions, very partially for diagnosing and deciding, and not at all for observing and selecting.

Comments on Both Analyses

The main conclusion to be drawn from both these analyses is that management consulting, the Harvard Case and the business game are rated as being more efficient than the other methods, for training on the problem-solving skills of observing, selecting, diagnosing, proposing solutions and deciding. When personal characteristics and attitudes toward others are to be affected, the preferred methods are sensitivity training and management consulting.

A word of caution is in order: the highly consistent rank given to management consulting (apparent also in Figure 2) suggests that there may be a halo affect concerning this method. That is to say, management consulting being highly praised (for other reasons) is given indiscriminately high effects on all variables. We doubt whether management consulting has all the virtues that it is given; for one thing it must not represent a very high proportion of a management student time and its "replication" must be very difficult (is in fact impossible). The halo may be due to the fact that it represents a "real" thing not just an exercise as in the other methods (except perhaps field study and sensitivity training, which is always felt by the majority of participants as a very real affair and not just an exercise) and that there is a commitment, usually of a financial nature. That management consulting may be a good educational tool is not denied, on the contrary. What is doubted is the kind of panacea that is attributed to it—it has drawbacks due to its rarity and non-replication.

Theoretical Considerations

A more general and theoretical comment applicable to all methods (including these not represented in our sample of seven) is that any method of teaching, like Esop's tongues, can be the best or worst method. It depends on the way that it is handled. This of course does not mean that we consider all methods equally effective for any purpose: the business game, for example, does have a time element in it, a press for taking a risk and feedback on the effects of this risk, that is largely lacking in the other methods. Our comment does mean that over and above the specific effects claimed for any one method, there exists an effect due to the way the method is handled.

A better way of expressing what we have in mind is that the specific effects of a method are or become operative (or do not) according to the way the method is used. To take the business game as an example again, this method purports to develop the understanding of the many factors that operate in an organization, and to teach the participants to take calculated (and productive) risks (these among other objectives). However, it is not an absurd thought to imagine that an individual in such a situation (and the way it is handled by the instructor) gets even more confused and learns not to take any risk at all. What we say about the business game can also be applied to any method. We do not have any "data" to support what we are saying and it should be taken as a general hypothesis about the effectiveness of any teaching method. We say general hypothesis because to become a scientific (testable, operatively) hypothesis it should be formulated in more specific ways, and for each method the operating variables will not be necessarily the same.

Sketched very roughly, the procedure will be, for any given method, the following:

a) detail all the objectives or effects that are claimed for the method,
b) choose one or more of these objectives for investigation (e.g. understanding complex operations, willingness to take calculated risks),
c) find ways of evaluating, even roughly the chosen objectives,
d) detail the conditions (or processes) that may impair or improve the the attainment of the objectives (e.g. stressful conditions may impair the willingness to take risks),
e) set up an experiment in which a chosen condition is present for some groups and absent for others, and evaluate the attainment of the objectives of all groups.

It can be appreciated how this processes called research can become heavy, involved and complicated, when a large number of objectives and of conditions are present, and this is always the case.

The practicing instructor cannot obviously carry out such a process. But he can try to operate in a way that would give him the maximum chances to develop his educational action. That is to say he may try to achieve the same end that one hopes to get from research results: find out the factors that affect (positively and negatively) the teaching-learning process. Although the procedure to be presently described cannot be dubbed scientific research, it has the advantage that it can be tried by any willing teacher. The procedure is the following:

a) detail to the students the different objectives that one intends to achieve with a given method (or a given course),
b) discuss with the students these objectives, so that additions, omissions, modifications of the initial list become possible on a "rational" basis (the inverted commas signify that all what is said is not necessarily rational and that what is not said is not necessarily irrational . . .),
c) detail the methods or conditions that one intends to use for attaining the objectives,

d) as in b), discuss these methods,
e) go ahead,
f) periodically (once a week?) ascertain by discussion (group or individual or both) how far the set objectives have been attained, and what is much more important, the reasons why they have been (or have not) attained,
g) proceeding from f), either continue or readjust the firing (the first possibility is very unlikely and should even be taken as a signal that something has gone wrong somewhere . . .),
h) continue the whole process until the maximum satisfaction of both teacher and learner are attained.

This process is nothing more than a reformulation of a feedback loop with student participation. Conceptually, it is a very simple idea (goal-action—appraisal of result—regoal), but it is difficult to operate in practice.

The main drawback for the operation of this procedure is that the teacher does not trust enough the student and trusts too much himself. For this process to operate the teacher must have at the same time and integrated in his self, a big dose of self-confidence and of self-doubt. Otherwise, he will not be able to listen, non-defensively, to what the students say, and distortions, omissions and non-perception will occur.

A second, but minor condition for the operation of this procedure, is that the number of students must not be too big. This difficulty can, however, be easily obviated by dividing the class into small groups (3 to 5).

To sum up, the participation methods currently used in management schools, may have special strengths and weaknesses, as described for example in the Hawrylyshyn model. Research in this matter is being pursued and will eventually clarify the factors operating in specific teaching methods.[1]

References

Hawrylyshyn, B. Preparing managers for international operations. *The Business Quarterly.* 1967, *32(3),* 27-35.

[1] CEI carries out a research project sponsored by the Ford Foundation on the "Effectiveness of Participative Teaching Methods". Two EAMTC member schools—INSEAD and "Institute für Führungslehre" at the "Technische Akademie Wuppertal"—are cooperating in the project.

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A Comment on "A Soviet and Western Concept of Set"

EDITOR'S NOTE. One of the functions served by the publication of research results is that it permits the scholarly examination and criticism of interpretations. No doubt such examination takes place with respect to most studies which are reported; however, it is seldom that comments and reactions are set down on paper. For this reason we are pleased to be able to publish a comment by Mr. Burnett on "A Soviet and Western Concept of Set," which appeared in the December, 1970 issue of AJER, together with a reply by the authors.

Hritzuk and Janzen (1970) have examined the concept of set from two different viewpoints: the Soviet concept *ustanovka*, identified with the psychologist Uznadze and the Western concept *Einstellung*, developed by Luchins.

The method consisted of having a group of subjects take three tasks: Luchins' Hidden Word Test, a "three sphere" test (haptic), and a "four circles" test (visual), the latter two tests being related to the Soviet concept.

The article states, "The hypothesis tested was that no significant differences exist between the observed and expected frequencies on excitation (of set) and extinction trials between the Western and Soviet test results (p. 221)." The proper formula for the chi-square statistic to test this hypothesis is given in Ferguson (p. 206) as

$$X^2 = \frac{(D - A)^2}{A + D}$$

where the A and D represent the two cells with different categories (i.e. the two set - no set cells or the two extinction - no extinction cells). This formula is used to provide a statistical test for the difference between two proportions based on the same sample of individuals. Thus the paired observations may exhibit a correlation that must be taken into account.

Using this formula the data from the first four tables were reanalysed.

Table 1: Examining the marginal totals, Luchins' "set" contained 32 subjects whereas the haptic modality "set" had 47 subjects. The statistical significance of this difference may be examined using the above formula, resulting in a value of chi-square of 11.84 which is significant at the 0.01 level. Therefore the null hypothesis of no significant differences between the proportions is rejected.

Table 2: Lunchins' "set" contained 31 subjects (Table 1 reported this value as 32?) and the visual modality "set" had 38 subjects. The value of chi-square = 1.96, not significant at the 0.01 level. Therefore in this case the null hypothesis of no significant differences between the proportions is accepted.

Table 3: Luchins' "extinction" had 3 subjects, the haptic modality "extinction" had 36 subjects; chi-square = 33.0, significant at the 0.01 level.

Table 4: Luchins' "extinction" had 3 subjects, the visual modality "extinction" had 30 subjects; chi-square = 22.09, significant at the 0.01 level.

Three of the four analyses do not support the authors' conclusion that the two concepts of set are similar. These new results are in agreement with a "common-sense" review of the marginal totals—the data from the tasks are quite different.

The chi-square statistic used by the authors in Tables 3 and 4 may be varified to be

$$X^2 = \frac{N\,(AD - BC)^2}{(A + B)(C + D)(A + C)(B + D)} \qquad \text{(Ferguson, p. 204)}$$

This formula provises a test for a different hypothesis, namely: "There is a zero relationship (i.e. independence) between the observed and expected frequencies". Since the values of chi-square that were computed using this formula were both non-significant, this hypothesis would be accepted.

This writer was unable to determine the formula used to compute the chi-square values reported in Tables 1 and 2. However if one were to use the above formula of chi-square for testing independence, values for the chi-square statistic of 0.30 and 0.52 are obtained for Tables 1 and 2 respectively. That is, the results of these analyses also indicate acceptance of the null hypothesis that the two concepts of set are independent.

In Reply to J. Dale Burnett

With regard to the calculations used for testing hypotheses in "A Soviet and Western Concept of Set", the basic formula used was:

$$X^2 = \sum_{i=1}^{r} \sum_{j=1}^{k} \frac{(O_{ij} - E_{ij})^2}{E_{ij}}$$

where O_{ij} is equal to the observed number of cases categorized in the ith row of the jth column and E_{ij} is equal to the number of cases expected under H_o to be categorized in the ith row of the jth column. The value of X^2 yielded by this method has (r - 1) (k - 1) degrees of freedom. Keeping our purpose, assumptions and procedures in mind, we felt this approach would give us the desired statistical results. When the results were recalculated, there were only very minor differences.

Originally we took different samples, cross matched them, tested them on individual tasks of extinction and/or excitation on the two theoretical approaches. We considered the results in 2 x 3 tables, then combined categories into a 2 x 2 table. We found no statistical differences in the results. We originally planned to report all the tables in 2 x 3 form, for example Extinction, No Extinction as well as Extinction, Weak Extinction and No Extinction. This is how the original results were calculated and recorded.

One realizes that the use of parametric statistics may be of more value in a problem of this nature. We reanalyzed our results using the number of trials as our dependent variable; the results of the analyses led us to believe the performances on the tasks were very similar. It is very difficult to debate assumptions, and we really do not believe there is some absolute right or wrong. For example, we see a "trial" as something rather discrete but others will argue that it can very easily be interpreted on the interval scale of measurement. It's probably what one can live with best.

In terms of interpretation, we had in mind the idea that groups may or may not differ with respect to the characteristics under investigation and therefore with respect to the relative frequency with which group members fall in several categories. In this case, we wanted to see whether individuals differed in the frequency with which they extinguish or excite a set in relation to their performance on the Luchins test. The hypothesis as stated in the article may not be too clearly written. The difficulty as we see it lies in the interpretation of the obtained results. One could look at whether the theoretical and observed frequencies could occur by chance as well as the observations taken on subjects as being dependent or independent of each other. We interpreted (correctly or incorrectly) the results as no difference in the performance on the extinction or excitation tasks, and related this to the independency between Luchins' and Uznadze's tests. We used a goodness of fit (or a test of independence). The formula that Burnett quotes:

$$X^2 = \frac{N\,(AD - BC)^2}{(A + B)(C + D)(A + C)(B + D)} \qquad \text{(p. 204, Ferguson)}$$

is statistically equivalent to the one (in a 2 x 2 table only) we used, to the one outlined in the beginning. However, the test is not whether the theoretical and observed frequencies could occur by chance but that the observations we took on the subjects were independent or dependent of each other. In actual fact, the way we explained our results we interpreted them with the latter view in mind, namely, that Luchins' and

Uznadze's tests are independent, i.e. measuring different aspects theoretically.

The problem was in the interpretation; we mistook the *direction* of our prediction. Accepting the null hypothesis for our chi-square tests meant that the tests were really independent. In other words, Luchins and Uznadze are really measuring different domains. We interpreted it as meaning that they were associated tests, measuring the same elements.

As far as looking at marginal totals, Burnett is quite correct that differences are obvious. However, we are sure that Burnett is aware that with small samples marginal totals can be quite deceiving. Unfortunately, in our case, the marginal totals did show significant differences but not as we postulated. An error occurred in our interpretation and we appreciate Burnett's critical examination. It appears that Uznadze's tests and Luchins' tests are not equivalent. This, in fact, makes more sense to us and agrees with our original hypotheses regarding the theory of set. We appreciate the analysis Burnett offered. The interpretation occurred as a result of confusing two different research projects being analyzed simultaneously; no deliberate attempt to distort the results was made.

John Hritzuk

Henry L. Janzen

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CONTEMPORARY INFLUENCES IN EARLY CHILDHOOD EDUCATION

By Ellis D. Evans, Toronto: Holt, Rinehart and Winston, 1971. 366 pp. $7.65.

It is rare to find an author who can interpret research in an objective, readable manner; however, Ellis D. Evans has done just that in his latest book, *Contemporary Influences in Early Childhood Education.* This book centers around some of the latest research into programs for young children. These programs vary from the highly structured approach of Bereiter and Engelmann to the integrated-individualized approach utilized in the British infant schools.

The chapter topics are as follows: (1) Psychology and Early Childhood Education: A Brief Perspective; (2) The Montessori Method; (3) Project Head Start and Follow Through; (4) Structural Pedagogy for Language Development; (5) Behavior Analysis Procedures; (6) Piagetian Influences; (7) The British Infant School Movement and Miscellaneous Programs; and (8) Major Issues Revisited. Each chapter ends with a list of useful references related to the program which was discussed. The book concludes with three appendices which include a description of frequently used tests, thoughts about school readiness, and a list of preprimary programs. The latter is the most useful as it is composed of program names, directors, authors, and addresses. A comprehensive index is included in the final section of the book.

The strength of *Contemporary Influences in Early Childhood Education* lies in the review of research. Evans presents a wide variety of research about each program under discussion, and he includes both the pros and the cons of the research. For example, in the chapter on "Project Headstart and Follow Through" a brief history of the project is given followed by a discussion of the purpose and objectives of headstart. As was pointed out, the program was conceived originally as a multidisciplinary approach made up of seven components: education, medical-dental care, nutrition, social services, psychological services, parent education, and the involvement of community volunteers. Various programs have grown out of this format, and Evans identifies three types: those that are predominantly social, those that are organized around pre-academic activities, and those that are "highly specialized in function and detailed strategies are devised to counteract the depressing effects of the child's early environment." Evans says that the third type of program is rare, although there is a move in support of "direct instruction."

Two types of studies, descriptive and evaluative, have been used in the evaluation of headstart programs. The most extensive study to date was the evaluative study carried out by Westinghouse Learning Corporation and Ohio University which Evans describes briefly. He also describes two Follow Through programs: The New Nursery School and the Tucson Early Education Model (TEEM). The New Nursery School deviates from the conventional nurseries in that a considerable amount of hardware is used. Activities in the New Nursery School center around

a tutoring booth, a typewriter and the Language Master. The Tucson project is more child-centered; activities are self-selected and interest centers are utilized as well as field trips and cooking activities.

The weakest sections of *Contemporary Influences in Early Childhood Education* are the chapters entitled "Structural Pedagogy for Language Development" and "Behavior Analysis Procedures" in that the research is not as inclusive as in other chapters. Evans describes in great detail the language programs developed by Carl Bereiter and Seigfried Engelmann. However, he concentrates mainly on the positive research and neglects to point out some fundamental criticisms like "teaching for the test" as has happened in some instances. As for the description of behavior analysis, it is done in a very clear and simple manner—but over and over again. The reviewer began to get the feeling that *she* was being conditioned.

The chapter titled "The British Infant Schools Movement and Miscellaneous Programs" is well done but is not as extensive as it might have been. More could have been said about the "new" British Infant Schools because some interesting approaches are developing which cannot be evaluated by standardized tests. An in-depth approach could have been more effectively utilized in the description of the "new" infant school concept and its influence on education.

Evans also could have written more about programs designed to enhance a child's self-concept. He did cite some interesting research being done in this area, such as that described in Besell and Palomare's book, *Human Development Program,* but he could have expanded upon this program or the related research.

One very important influence in education today that Evans failed to mention relates to commercially produced programs. Many programs are developed and then "packaged and sold" to the schools, such as the one developed by Bereiter and Engelmann. In spite of such ommissions, *Contemporary Influences in Early Childhood Education* is a valuable reference or a suitable text for a course in program design in early childhood education; it will be especially useful to educators interested in *programs* for young children and the influence of such programs on early childhood education. The book is a unique addition to the ever increasing amount of material being written about the subject of early childhood education.

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THE FOUNDATIONS OF MODERN EDUCATION

By Elmer H. Wilds and Kenneth V. Lottich, New York: Holt, Rinehart and Winston, Fourth Edition, 1970. 590 pp.

In their study of educational theory "from the day of primitive man to the present age," Professors Wilds and Lottich attempt "not only to

relate the history of education with corresponding social movements but also to illustrate the significance of contemporary accomplishments and their adjacent problems." The task is not an easy one for the very complexity of history necessitates the selection and delimitation of material.

Those expecting an in-depth description and explanation of historical events will be disappointed as the text is a survey in twenty-one chapters highlighting a variety of educational landmarks. The first four chapters outline educational developments from the tribal to the early Judaic period, including a study of oriental conceptions of education. Chapters five to eleven examine educational change in Roman, Medieval and Reformation Periods, while twelve to seventeen center on the investigation of later European thought. The last four chapters provide a cursory study of some of the more recent changes in American and "international" education.

"By tracing the influence of changing social, political, economic, and religious views upon the development of educational thought," the authors seek to "provide a sound basis for the reinterpretation and evaluation of present-day theories and routines." The difficulty in conducting such a survey is one that is common to any coverage of an extended time period. On the one hand, there is a danger of excessive generalization and oversimplification which may minimize the significance of particular events. On the other, there is a possibility of including a host of historical minutiae not suited to the expectations of a survey. There appears to be some evidence of such a dilemma, particularly in the interpretation of medieval scholastic thought.

This problem, however, is overcome in part by a technique that subdivides each chapter according to educational (1) aims, (2) types, (3) content, (4) agencies, (5) organization, and (6) methods. The value of this classification is that the authors are able to combine a discussion of particular educational theorists with the social movements of which they are a part while maintaining the original purpose of the book. Though the schema is somewhat repetitious, it provides a ready reference to the salient features of a given era. Not to be overlooked is the listing of secondary as well as some primary source materials at the end of each chapter which suggest useful background reading to the topics under discussion.

Whether or not the text achieves its purpose depends, it would seem, upon the cognitive perspective one takes to the nature and purpose of educational history. At best, any attempt to illustrate the connection between historical events and the present is made difficult by the great number of variables bearing upon any given situation. The authors have met this challenge in a defensible survey that has a place in introductory studies. Moreover, it should provoke other interpretations and assist in the understanding of educational problems past and present.

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The University of Alberta

HELPING AND HUMAN RELATIONS: A PRIMER FOR LAY AND PROFESSIONAL HELPERS.

Volume 1, Selection and Training; Volume 2, Practise and Research. By Robert R. Carkhuff. New York: Holt, Rinehart and Winston, 1969.

In the past few decades the criteria for success in the education professions have changed rather drastically. The counsellor is no longer viewed in terms of dispensing information and pigeon-holing clients. Also, the image of the good teacher is no longer closely associated with discipline, classroom decorum and the imparting of information. On the other hand, success is increasingly being viewed in terms of ability to relate and communicate. Carkhuff in the aforementioned books suggests that ability to communicate in a helpful manner is a skill and that it can be acquired; thus dispelling the often held notion that it is innate and immutable. In his recent two volume edition he purports to provide the basic cookbook. In a series of propositions and corollaries, human relationship variables are spelled out with a precision that is analogous to the physical sciences. In addition, selection procedures for prospective helpers are suggested and training procedures are discussed. Carkhuff has written his texts not only for the traditional helpers—social workers, counsellors, teachers and other professionals in the area of human relations—but also for lay persons concerned with effective helping. He emphasizes however, that they are designed to be used "under the guidance of an experienced professional; one who is equipped to handle all modes of practise and inquiry".

In the two volumes, Carkhuff has attempted to operationalize what he considers to be the critical phases of effective human relations. These he globally refers to as the core facilitative and the action oriented phases or dimensions. The facilitative phase refers to the ability to let the helper know he is being understood and respected. The action oriented dimension refers to the application of specific techniques and knowledge in order to provide maximal help. Carkhuff's position is very clearly defined, and he has managed to bring together approaches which have previously been viewed as widely divergent, into an integrated package.

In the first volume, Carkhuff presents his basic model and also provides a distinct set of measurement guidelines for discriminating what is facilitative and what is deteriorative. The focus is then on effective selection and training procedures based on these criteria. In the second volume the emphasis is on applications of his model to specific situations. Approaches to behaviour change are presented along with, in many instances, actual case materials. Topics are presented in a very specific manner (i.e. Training Parents to Work with Their Disturbed Children) and consequently have potential for direct application. In addition, arguments are presented for translating knowledge and skills concerning the helping relationship into later social action projects.

In conclusion, it is the feeling of the reviewers that Carkhuff has made a major contribution to both theory and practise in the helping professions. At the same time, it is imperative that the reader exercise his powers of discrimination. Carkhuff's approach is deductive with sometimes questionable assumptions forming the building blocks for subsequent corollaries and propositions. Wherever possible Carkhuff

cites research to support his arguments. This research however, is usually by himself and/or his collaborators or colleagues. His writing style is emphatic which may lull the reader into feeling that all of the long sought after answers relating to the helping process have finally been found. It should be realized that Carkhuff himself emphasizes that his position is tentative and subject to change with new evidence. These final comments have not been intended to detract the reader from the books but to encourage him to keep an open mind and avoid wholesale acceptance of books Carkhuff himself calls "primers".

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